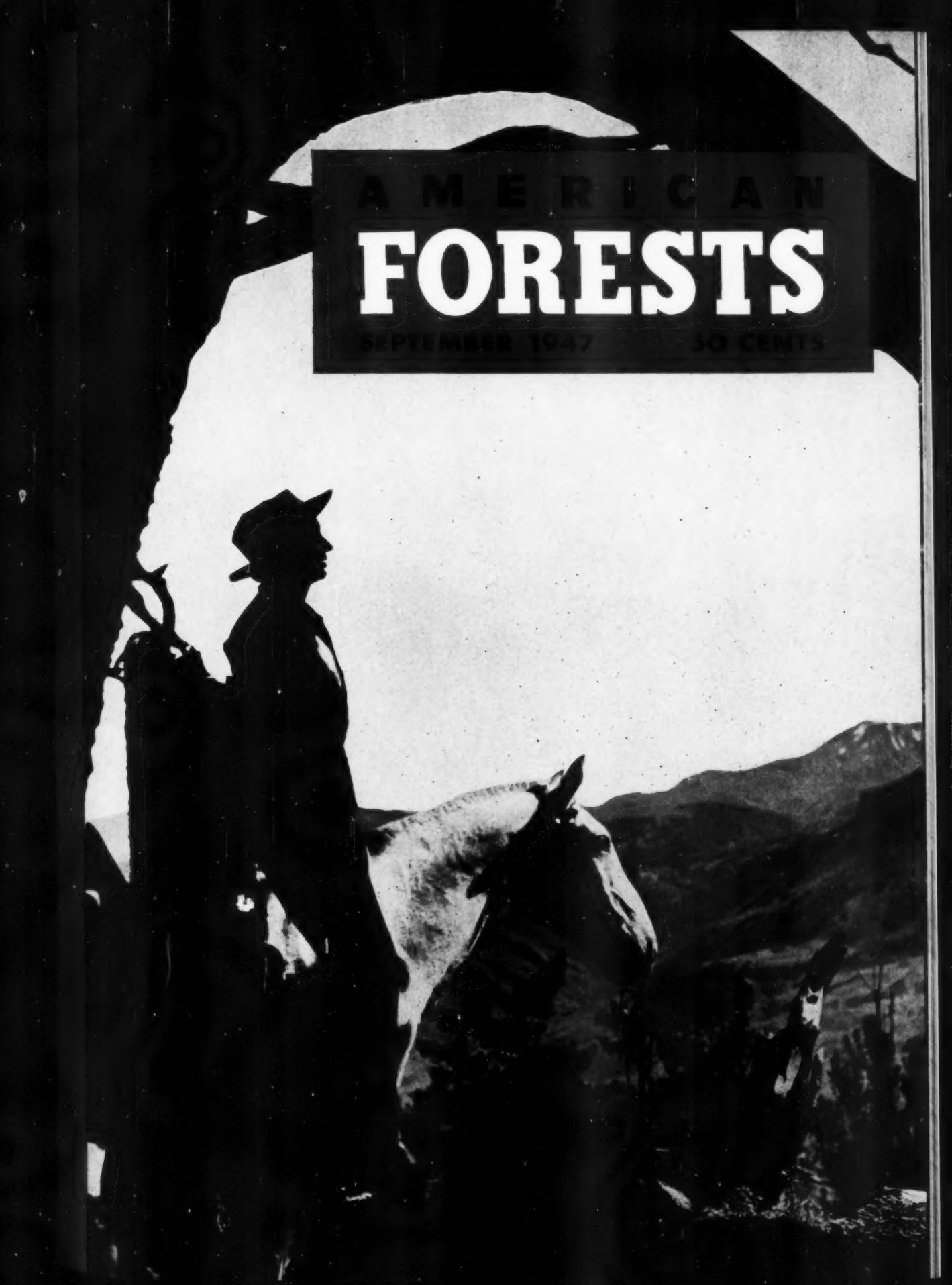
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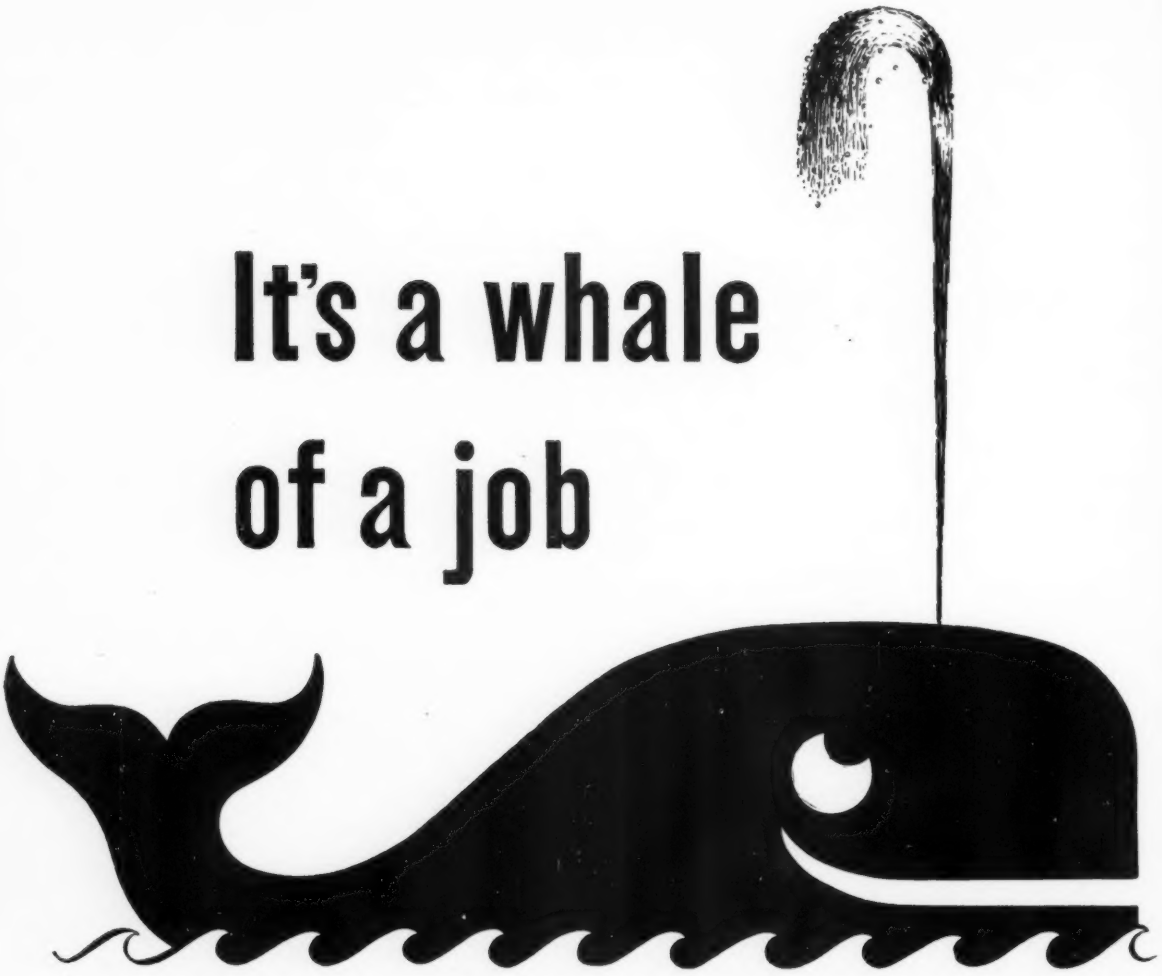

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## *The Purpose*

The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

***The History*** MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force—The American Forestry Association, first organized in 1875 and made a national influence in 1882.

***The Record*** THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nationwide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

***The Support*** FROM AN ORGANIZATION of a few hundred members three decades ago, the Association has attained a substantial membership of many thousand men and women, living in every state in the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

***The Program*** BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.

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Last night another trainload of "Caterpillar" products rolled out of the yards. With the factory's peacetime production at an all-time high, such scenes are of daily occurrence.

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In fact, "Caterpillar" power has become woven into the very fabric of our economy and progress. Big-scale utility, reclamation and conservation projects could scarcely proceed without it. Agriculture needs it. Logging demands it. It is a "must" on highway construction and maintenance.

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So, you see, the "world of 'Caterpillar' Diesels" is a big one. The needs that "Caterpillar" must supply are many. The destinations of every trainload of "Caterpillar" products are widely scattered.

To allocate the factory's output is no small problem. Apportionment is fair — by regions and by industries. Priority of orders is the reasonable basis for customer deliveries. "Caterpillar" subscribes firmly to that principle. So do "Caterpillar" dealers, whose responsibility it is to carry it out. Each is a businessman of ability and integrity, who merits the confidence of his customers and his company.

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### Salute to Scandinavian Forestry

SIR: The article in the July issue entitled "Forestry's Seat by Sweden's Fireside," by Robson Black, should be reprinted and sent to every member of Congress and every governor of tree-growing states. It is an inspiration in itself because it demonstrates how it is possible to manage forests in sub-arctic regions on a sustained-yield basis without regimentation or heavy expense to taxpayers.

Mr. Black has given a very complete account of the salient points of the Scandinavian forestry system, which is more effective than any other system in the Old World because it is based on cooperative efforts and local supervision rather than relying on a central forestry service to attend to all details. Forestry regulations in Scandinavia, while established by law, are flexible and the application in each instance is based on local conditions and common sense.

It is my belief that most of our states could profitably adopt a modification of this forestry system.—*Axel H. Oxholm*, Washington, D. C.

### Foresters and Shade Trees

SIR: I have read with interest the article "Do We Need a Shade Tree Service?" by Ernst J. Schreiner, in the July issue and, knowing of the efforts being made by countless organizations and public agencies toward shade tree betterment and city improvement, I must disagree with him.

I am fairly familiar with the problem, having worked eight years in the park department of the City of Duluth. Here are some thoughts that occur to me: What about the work of eminent horticulturists which Mr. Schreiner neglected to mention? — or the work of the American Institute of Park Executives, the National Shade Tree Conference, the Roadside Council and other worthy institutions?

And don't you think it important to stress the lack of interest on the part of foresters generally? — and what professional foresters can do to help in the various communities? Their advice and participation in civic improvements has often been lacking. — *John V. Hoene*, Duluth, Minnesota.

### On Protecting Big Trees

SIR: While in California this summer, I so arranged my trip that I stopped at Gilroy to see the giant California live oak that is listed on your current "List of Big Trees" as the largest of its kind in America. The secretary of the Gilroy Chamber of Commerce directed me to a property about two miles south of the center of town where there had been a public swimming pool. Here, he said, I would find the big oak.

I was considerably concerned when I found that the enormous oak had been cut down. The owner of the property informed me that he had had this tree and the others removed because a visitor had been injured by a falling branch.

If this was the largest oak in America, and the Big Tree report so indicates, its loss is a calamity. What makes it worse is that its loss was due entirely to the lack of proper attention, for no doubt a few dollars' worth of tree surgery would have preserved it for many years. The stump appeared to be rugged and in no way rotted.

It seems to me that some effort should be made to provide perpetual protection for the great trees—legal and financial, as well as the lip variety. Public ownership should be at the national level; private or state ownership is unreliable. Certainly the National Park Service should have an opportunity to handle this problem. The calamity at Gilroy must not be repeated.—*Paul H. Fluck, M.D.*, Lambertville, N. J.

(Editor's Note: *The Gilroy oak was 38 feet in circumference, 88 feet high, and had a limb spread of 123 feet. A canyon live oak in the Angeles National Forest, California, is 36 feet in circumference, 60 feet high, with a limb spread of 165 feet. The largest white oak, at Wye Mills, Maryland, is 28 feet in circumference, 95 feet high, and has a limb spread of 165 feet.*)

### Trail Rider Reports

SIR: As a member of Trail Rider Expedition No. 1 (Flathead-Sun River Wilderness, Montana) may I say the trip was one of the finest I ever hope to make. The scenery was perfect and I enjoyed it to the utmost. Particularly though I want to tell you of Joe Murphy's (head packer) excellent management. He made it all run so very smoothly from the moment we got up in the morning until the time came to turn in. His boys (packers, wranglers, cooks, etc.) were trained perfectly and the entire trip could not have been better organized or more successfully executed.

I really wish I could find words to tell you adequately how ideal the whole trip was in every way. I can only say "thank you," but mean it most sincerely.—*Eleanor W. Livingston*, Missoula, Montana.

SIR: Mrs. Aubel and I want you to know how much we enjoyed Expedition No. 2 (Flat Tops Wilderness, Colorado). It was a trip we shall always remember. Hal Wilm, who represented The American Forestry Association, was kind, lively and courteous. You could have selected no better leader.

My congratulations for managing such trips. I hope you will keep them up.—*C. E. Aubel*, Professor of Animal Husbandry, Kansas State College.

SIR: Please know how much I enjoyed the Trail Ride in the Sawtooth, Idaho, Wilderness. Every detail was carefully organized. As one of the newest of your members, it is a great satisfaction to realize that these trips are carried out in so many different areas. — *H. Justice Williams*, Philadelphia.

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# Editorial

## Conservation and the World Food Crisis

On the eve of the annual conference of the United Nations Food and Agriculture Organization, which opens at Geneva on August 25, Director General Sir John Boyd Orr has sounded a solemn warning that the world shortage of food is growing more critical. Diets in western and central Europe, he predicts, will be still lower next year, and in Asia they will remain at present very low levels unless imports can be increased.

This is explained in part by last winter's unfavorable weather, particularly in Europe, which adversely affected home-grown food supplies. But there is another and less temporary reason—the world population is increasing by 15 to 20 million each year, and demand for food is universally higher than before the war. Though less pressing than the immediate task of feeding the war devastated nations, this long-range problem of permanently increasing food production is the one that concerns FAO most. And well it should, for barring some catastrophe, the answer to whether our grandchildren will continue the essential habit of eating rests upon its solution.

Sir John undoubtedly had this in mind when in his pre-conference statement he warned that it is "dangerous" to treat the short-range and long-range problems separately. This is just another way of saying we are inviting disaster unless we get our land management house in order—and quickly. For despite his reference to Latin America and Africa as "safety valves for relieving the growing pressure of the world population upon the world food supply," Sir John knows that the food-producing lands of today must also be the food-producing lands of tomorrow. With minor exceptions, the frontier of new lands is gone forever.

No less an authority than Dr. W. C. Lowdermilk, eminent American soil explorer, confirms this view. The only new frontier, he said recently, lies in the conservation of land under use.

About three and three-quarter billion acres of land are now being cultivated throughout the world. "It is possible to expand this area to about four billion acres, or eight percent of the world's entire land area," Dr. Lowdermilk revealed, "but greater production will come as increased yields from land already cultivated, not from increases in area. The simple fact is that the best lands of the world are now under use."

Measure this against the estimated increase in world population—from the present two billion to 21 billion in 300 years—and the odds in civilization's race with famine become shockingly clear.

This sobering situation must be met head-on not only by FAO but by the leaders and people of all nations. Their main hope lies in the application of proven conservation measures to existing cultivated lands, as well as to supporting range and forest lands. "If a field has been farmed for a thousand years," Dr. Lowdermilk observed, "the prospects are that, with equal care, it can be farmed for another thousand years."

In its universal role, the United Nations Food and Agriculture Organization must meet this challenge—a challenge greater than that of war. For hungry people, as Dr. Lowdermilk has wisely stated, do not honor treaties; nor do they stay within their own borders. Can FAO devise ways and means to keep the food-yielding lands of the world in maximum production for a thousand years?—or for 300 years? Unfortunately, there is no alternative if civilization is to survive.

Dr. Lowdermilk's approach to this critical problem is deserving of world-wide attention. In essence, he suggests that farmers of all nations be enlisted in a movement to conserve with use the world's four billion acres of food-producing land.

"The greatest prospect for safeguarding our lands," he said, "rests in the procedure that stimulates the growth of a conservation movement out of the soil, so to speak—out of the fields, out of the pastures and woodlands, out of the farms, and in the hands of farmers. A conservation movement of this kind—of the people, by the people, and for the people—will march on from generation to generation."

As an example of this democratic approach, he holds up for world-wide scrutiny the soil conservation districts of this country. "These districts," he declared, "embody the formula of self-government and give play to individual initiative within certain objectives for the common security and welfare of all." When the farmers of the world make use of a mechanism such as our soil conservation districts, he concluded, "we shall have the best promise of growing enough food, nation by nation, for all peoples."

Whether or not this is the answer to the world's food dilemma, we cannot say. But we do know that when the basic principles of conservation are applied by individual initiative—by doing the job ourselves, so to speak—the good earth, whether called upon to provide food, grass, or trees, can be very bountiful. An understanding of this, whatever the means, by the billion and a half farmers of the world might put civilization well out in front in its race with famine.

◀ **Georgian Bay, Ontario—Photograph by John Kabel**

U. S. Forest Service

# The Firing Line

By OLAUS J. MURIE

"WANT to go up to the firing line?"

I had never seen this modern version of sport and gladly accepted the invitation. Accordingly, early next morning—it was in January 1943—four of us took the winding road above Gardiner, Montana. As we climbed into the hills we began to pass parked cars, out of which poured red-capped hunters who immediately set about looking for a suitable scene of action. We finally found a likely looking spot and stopped to watch the preparations from the warmth of the car.

There was no shooting yet. The law forbids shooting before eight o'clock. I thought vaguely of a grandstand seat at a football game, of the tense moments before the whistle blows. Here before us on a snowy slope, in the tricky light of a cold, bleak, early winter morning, a spectacle was in preparation. More cars were arriving, seeking positions of advantage. I noticed a group of hunters working up a slope. Far to the right others had left the road and were now beginning to climb. Then, on the hilltop itself, outlined against the sky, stood another hunter in bold silhouette.

Finally the principal contestants arrived. From somewhere had come a small band of elk. It seemed unreal that they should arrive so promptly to take their part. We looked at our watches. Not yet time. The elk went up the broad snowy slope, moving slowly. Soon they were approaching the top. Surely, we thought, they would get away if they could get over the crest to the other side. But no—something was wrong up there! They stood for a moment, huddled together, gazing intently into the distance. Evidently hunters were over there, too. So they turned and hurried back in our direction in mild panic. They were, we guessed, surrounded now.

The little band changed directions a number of times. I have forgotten many details of what followed but presently several shots were fired, though it still was several minutes before eight o'clock. I remember that we drove ahead some distance for a better view. The elk had gone out of sight around a shoulder of the mountain, but now we saw some of them again just under a ridge. Shooting was under way. Rifle fire increased in intensity and kept breaking out in new spots. Some of the elk fell. Others, bewildered, changed direction in bursts of panic. But eventually all were down.

Around the slopes people clustered at carcasses. One elk had fallen near the road not far from our new position. We saw a hunter approach with hunting knife in hand. He stooped over the animal just as it gave a spasmodic kick—and the nimrod jumped back with a startled look on his face.

A voice came down from the hill: "Hey, any o'you guys want an elk?"

Evidently an extra elk up there. A father and his young son stood near us. Apparently the father was unequal to the short climb and after a few words between them the boy, with a big rifle, started up the hill. But before he had gone half way someone else had come over the ridge and taken possession of the carcass.

Now there was more rifle fire, where other bands of elk had met up

---

**THE AUTHOR,** one of America's outstanding wildlife authorities, is biologist with the U. S. Fish and Wildlife Service. During his long career he has made life history studies of game birds and animals and, in recent years, devoted much of his time to the elk herd at Jackson Hole, Wyoming.

with hunters. We noted one particularly heavy "*boom!*" in the distance that kept recurring at intervals, like heavy artillery.

Excitement died out in our immediate vicinity and we moved back down the road. We could see several men climbing up the far side of a deep ravine, in closed territory, watched by scores of wondering people on our side. We saw them fire a timid shot or two. And sure enough, the game warden came along just then. He gave them a hearty bawling out and the hunters started back.

The show seemed to be over and we left. As we drove back toward Gardiner we saw people tugging at elk, pulling them down the slopes; some were loading carcasses on their cars; others were just standing by their fallen animals. I had had my first personal experience with the famous firing line.

At the railroad station at Gardiner, after the close of the season, elk carcasses were piled for shipment. Some of the meat was obviously spoiled. One old fellow lingering at the express office was cursing the world in general.

"I shot three elk up there," he complained, "and here I go home without one." Each time someone else had beaten him to the carcass. This, I learned, is a common experience on the firing line. You may shoot an elk, but unless you are spry, someone else will have his tag on your animal before you get there. I was told of one young lady, a local girl, who shot her elk, but someone else had claimed it. She expostulated:

"That's my elk. I shot it. You know I did!"

"Sure, that's all right," the hunter replied ungallantly, "but it's my tag on it. So what are you going to do about it, sister?"

Innumerable instances of this kind can be cited. They characterize firing line shooting.

It was reported to me that on New Year's Day, 1938, more than 1,100 elk were shot in a small area near Gardiner. An observer on that occasion described a bloody trail leading into Yellowstone where wounded animals had gone—to later die. Many dead elk were found below Decker's Flat.

Sometimes a hunter will kill an elk down a steep slope or other inaccessible place. After dressing it out, he starts back for help. But on the way he comes upon another, unclaimed, elk in a more favorable location. He takes this one instead, and abandons the first.

**This revolting exhibition of mass killing "on the oil" may spell doom for big game hunting, says an eminent wildlife authority, unless we correct the problems of mismanagement and overpopulation of game and sportsmanship is revived as the symbol of the chase**

Anyone who likes to shoot animals has his opportunity on the firing line. One fellow, a good marksman, deliberately killed 14 elk—and claimed the last one for himself. In the general rifle fire such performances cannot be detected. It often happens that when a band of elk is shot down, there are more dead elk than hunters to claim them. Occasionally deer, mountain sheep, horses, or hunters are shot. No one claims these with his license tag.

For years we were accustomed to citing the Kaibab (Arizona) as a horrible example of overpopulation of game and mismanagement. We do not speak so much of the Kaibab any more. Now, there are many other "Kaibabs" throughout the West.

So it is with the firing line. The one at Decker's Flat in Montana, has become famous. There are others—and for many of us they are coming close to home.

For example, those of us who have lived and hunted in Jackson Hole, Wyoming, are aware of the changes that have occurred. Here, too, hunters have had opportunities to congregate in automobiles for mass shooting.

One day I asked a veteran game warden, who had just come down from Antelope Flats, "How's it going, Fred? Are they getting any elk?"

He laughed. "You don't need a gun up there. You just have to be a fast runner."

Here was the same story. The runner who first reached a dead elk with his tag was the successful hunter.

One day three of us drove up on a low spur of a butte, where several cars had been parked. We arrived just in time to witness a "hunting" scene on the sage flats below. Nine elk were traveling northward parallel with the highway, heading for a crossroad which they would normally reach in a few minutes. Along the highway several cars were racing for

**Under heavy rifle fire, some of the elk fell. Others changed direction in bursts of panic. But eventually all were down**

Montana Fish and Game Commission

favorable positions. Likewise, along the crossroad other cars were maneuvering for the more likely points where the elk might come.

Suddenly rifle fire began. The elk had entered the trap. Those on the highway were firing straight in our direction, so we stepped back a few yards, out of sight. When the elk had moved on a bit we went out in view again and watched the progress. By this time they were in range of the hunters at the crossroads. Several fell. As the bombardment continued from all points, a bystander at another car remarked to us, disgustedly, "I thought there was supposed to be a shortage of ammunition."

Soon seven elk were down. Two bulls broke through the line and escaped into the aspens on the hill—one badly wounded.

My warden friend described another incident he had witnessed. A bull elk was crossing the open flats when concealed hunters opened fire. I don't recall the number of hunters—but 185 shots were fired before the lone bull elk fell.

These incidents took place in open country, easily available to cars, But even in some places where cars cannot go there are changes. I recall a day some years ago, when two of us decided to go into the hills on an elk hunt. We thought that by starting early in the morning we could get beyond the congested zone.

For awhile it seemed that this plan would work. We passed several hunters afoot and were getting into the back country. We struck a blood trail in the snow and followed it a long way, thinking we might retrieve a cripple. It was at least 24 hours old and there were no man tracks with it. But we had no success. Later we found another. No one had followed that, either. We climbed up on a ridge and there, below us on the other side, was a string of pack horses. Someone was going in to pack out meat. We veered off to the right. Then shooting broke out in that direction and we heard voices. We tried to steer a middle course and hurried to get away from all the racket, but we also heard talking just below the ridge we were on. Two horsemen were riding behind us. Then we discovered three other horsemen passing below.

One of the two who had ridden up to us unburdened his mind. It developed that he was an out-of-state hunter who was familiar with the Jackson Hole country. "I've been coming here to hunt for years," he said. "This has been my favorite hunting country. But I am never coming again."

We learned that a hunting camp with a big string of saddle horses for hire had been established in the foothills and that we two, afoot, were competing with horses. By this time we were completely surrounded by hunters. Our enthusiasm vanished and we headed back for the valley.

The firing line has become common enough in the West to have been incorporated in the sportsman's vocabulary. In localities where it is of long standing it is accepted as the normal thing. However, in places where it has only recently developed it is resented by the local people. It is resented in Jackson Hole. Congested shooting conditions occurred here again in the fall of 1946, with the result that residents of Jackson Valley were aroused in anger. A sample of the protests may be taken from a letter by S. P. Van Arsdall, originally published in the Cody *Enterprise:*

"Imagine my surprise to see some 300 to 500 cars lining the hills and valleys all around, with high power rifles sticking from the windows, waiting for the kill at daybreak.

"Over the hills came treking the elk in separate bunches and all innocent of the danger ahead. Away in the background we noticed a jeep which flanked the elk and drove them toward us.

"When these elk, both cows and bulls, approached the firing line, I then realized what it was all about. One has never heard, except in battle, such firing. This excited the elk to such an extent that they simply milled about. Few escaped, and they were probably wounded.

"This method of killing is far from sportsmanlike and, as I see it, our elk herd is not long here with this kind of slaughter."

I do not agree that our elk herd, as a herd, is in danger of destruction. That is merely a matter of adjusting the hunter kill from year to year. But there is real danger, as Van Arsdall demonstrates, that we will lose something from the human heart. The fact that hundreds of people every year are willing to take part in the firing line shows how far we have already gone.

Quoting from Archie Pendergraft, Wyoming State game warden, in *Wyoming Wildlife* for September 1942:

"An apt summing up of this mistaken attitude was given by the disgruntled hunter who once snarled at me: 'I've burnt up $10 worth of your damn 30-cent gas, and I ain't got my elk yet!' Such hearty nimrods expect to find, pursue, and bag their

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**At the railroad station after the shooting elk carcasses were piled for shipment. Some of the meat was obviously spoiled**

# UNHOLY FIRE

**"Hurt not the trees," the Good Book says, so the Greek Orthodox Church back in 1901 built an ecclesiastical fire under woods burners**

**By GEORGE VITAS**

On July 2, 1901, the Greek Orthodox Church made clerical history. It issued a vigorous proclamation "to all priests, monks, and other Christians," forbidding the burning of forests. It capped the proclamation with a resounding curse and threat of excommunication from the church for those who set forest fires.

For years previously, Greece had been plagued with man-made forest fires. How to prevent this destruction? Laws were tried, but failed; appeals to patriotism were attempted without success; self-interest appeals were tried, but they too failed. Forest fires continued to be set—as in the United States today—by the deliberate or careless action of the population. Finally, the Greek Church stepped in with its all inclusive pronouncement on forest fire prevention.

As invaders learned to their sorrow in World War II, Greece is covered with rugged mountains. Generations of forest fires and overgrazing by goats have denuded the once heavily timbered mountain slopes. As a result, Greece is deluged with floods in the spring and severe drought in the summer. Water rushes along the bare slopes as if it were flowing down an inclined table top. The forest cover that nature had originally established there to slow and soak up the runoff is gone. Recent UNRRA activities testify that Greece is normally a poor agricultural country. Exclusive of war, destruction and abuse of her forest resources through fire and overgrazing is, in great measure, responsible for her plight.

A disastrous series of fires in the early 1800's wiped out more than half of the magnificent fir forest which covered Mt. Aenus on the Island of Cephalonia. As late as 1901, forest fires continued to seriously menace Greek timberland. R. B. Richardson, an American who had lived and travelled in Greece for many years, wrote in the *Nation* Magazine, "A few years ago nearly the whole side of Mt. Penteclicus, which confronts Athens, was on fire for two nights, making a grand spectacle for Athens. I once counted 24 forest fires on a journey by sea from Piraeus to Nauplia."

Richardson describes the conflict between timber growing and goat raising in these words: "The evil (fire) is difficult to cope with, because, in the long dry summer, the vegetation on the surface of the soil is reduced to tinder, and when the gentle shepherd who always smokes, throws down his match, he is likely to start a fire. He is suspected of doing it sometimes of set purpose in order to increase the area of pasturage." Of goats and their effect on young trees, Richardson wrote: "Greece pays dearly for her goats. They are everywhere and wherever they are, young trees cannot grow. The Holm oak, for example, if left to itself, attains a height of 30 to 40 feet. But it is usually kept down by goats to the dimension of a shrub at the top of which they can continually gnaw."

Generations of "gentle shepherds" and careless forest users had persisted in burning Greek timber. Alarmed authorities tried the usual methods of education, persuasion and law enforcement with little success. Finally, in July, 1901, the Greek Orthodox Church made an unparalleled move. It issued an Encyclical proclamation of the Holy Synod "to all priests, monks, and other Christians, to the end that they refrain rigidly for the future from burning a forest, and from every other damage to the public and private forests and trees, and from concealing or protecting those guilty of such a crime."

The Encyclical then gave powerful backing to the proclamation with this curse: "If, then, contrary to hope and expectation, and in spite of this proclamation there should be Christians who persevere in this unholy practice, abhorred of God, either setting fires to forests themselves or encouraging others in the act, or not bringing information immediately before the proper authorities against the persons whom they know to have set fires, and not coming forward as witnesses to secure confirmation of their guilt and punishment of the guilty, and not affording zealous cooperation with the public officials in the matter when they are able to do so; let all such persons, who ever they may be, be excommunicated from the Church, accursed, and shut out from forgiveness. The wrath of God and the curse of the Church be on their heads, and may they never see the success of whatever labors they may be engaged in, and may they have the curses, also, of all the saints and the inspired fathers of the Church."

The proclamation concludes: "The Holy Synod enjoins upon the reverend hierarchs and bishops to announce in all the churches of the realm the punishments to be inflicted upon the burners of forests, whether public or private."

The history of Christianity will probably show no instance in which a church took such drastic action to prevent man from setting forest fires. It not only indicted the fire setters, but those who fail to report guilty persons or hesitate to appear as witnesses.

Forty-six years later Greek foresters are still fighting the unholy alliance of forest fires and goat grazing. Dr. Christos Moulopoulos, professor of forestry at the University of Salonica, on his visit to this country last year, emphasized that Greek forest fire losses must be reduced still further.

Perhaps America can take a lesson from the Greeks. It is doubtful if any American church would follow the drastic path of the Greek Church, but certainly combined action from the pulpits of American churches would help immeasurably in the fight against careless fire destruction.

American churches can help save American forests. The Bible reminds us to: "Hurt not the trees." (Revelation 7:3.) Forest fires do hurt trees; and they hurt America, too!

# DP'S IN THE WOODS

By MARVIN KLEMME

PREDICTIONS that the coming winter in Europe may be the most critical since the end of the war, makes timely the little-known story of the part displaced persons, now universally known as DP's, are playing in the harvesting of fuelwood and other forest products. The fact is that probably half the labor used in cutting timber in the British Zone of Germany for export to England—and this ran into almost 200 million board feet during the first six months of 1947—has been supplied by DP's.

This wasn't the case back in 1945, however, when I was assigned by UNRRA as a forestry advisor in the British Zone. The situation then was about this: despite warnings by military government officials and UNRRA that the DP's would freeze if they did not lay in stocks of fuelwood, the general belief was that they would not work in the woods—and authorities lacked legal means of forcing them to do so. German foresters shared this conviction. Their efforts during the war to induce many of these same people to work met with little success. Their reasoning was that if they would not labor with a bayonet pointed at their backs, what chance was there for a voluntary work program?

Probably because there was no other way out, the military government officials, whose responsibility it was, finally decided to give the wood-cutting idea a trial, and I was loaned by UNRRA to take charge of the program.

My instructions were to look the situation over and draw up a plan. After inquiry at some of the camps I found there were considerable numbers of foresters and skilled woods workers among the DP's. And to my surprise, I also found that many of these men were tired of doing nothing and would welcome an opportunity to return to their profession.

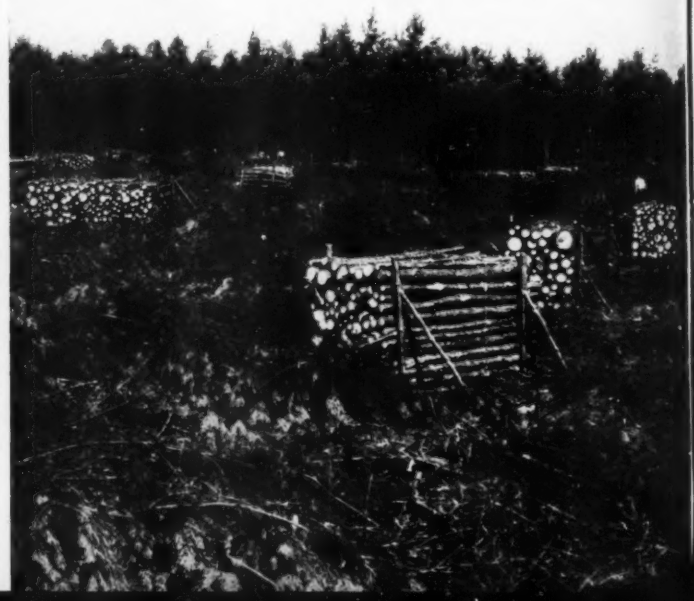
That was a good start—but there was trouble ahead. Just as we seemed assured of sufficient volunteers to meet labor needs, we ran head-on into the problem of where to obtain tools as well as transport and suitable clothing for the men. The workers had only one change of clothing—and it rains a great deal during late summer and fall in the British Zone. Another problem was soap. Since the men couldn't get gloves, they needed soap to wash resin off their hands. And we had trouble with the quartermaster section of the military trying to get extra food and cigarettes for the workers. For a long time authorities took the attitude that all DP's, whether they worked or not, should receive the same rations.

Despite these handicaps, we got the program in operation near Lubeck, on the shores of the Baltic. Soon we were cutting over most of the British Zone. The men were organized into groups of 21, a foreman with each group. Predictions were made that men of different nationalities could not be assigned to the same area without starting a small war. We disproved that. Before the first week was out we had teams of Poles, Latvians, Estonians, Lithuanians, Ukrainians and Yugoslavs. We even had one team of "stateless" people. We put these teams working just far enough apart so that they wouldn't drop trees on each other. And we fed them—all nationalities—at the same mess. Mobile field kitchens brought out hot meals and the men lined up like soldiers. I can't recall that we had any disturbance.

It was interesting to watch the DP's work. They usually insisted on spending the first two or three hours in the morning felling enough trees to last through the day. They seldom yelled out a warning when a tree was to fall until it was half way to the ground — in fact, they violated every safety rule known to woodsmen. Yet, there were not too many accidents. Most of the injured were German civilians who followed the

**Polish DP's, remembering how Nazis treated their forests, ignore cutting instructions**

**This 30-year-old stand of Scotch pine was clear-cut because it was owned by a Nazi**



**Allied airmen dropped fire bombs here — wood-hungry Germans salvaged what was left**

**Of the DP groups, the "Balts" were the most dependable. This is a Latvian forestry crew**

woodcutters to salvage limbs and stumps for fuelwood.

By working the different groups in the same area, we developed keen competition. This came to a climax when we established a rule that a team could quit and go back to camp when each man had cut a designated amount of wood. This made each group, individually and collectively, work harder. Members of one nationality disliked watching members of another climb in trucks and head for camp while they still swung axes. The result was that we soon had wood stacked all over northwest Germany.

There was a great shortage of transport. We got vehicles where and when we could, including a few old wood-burning vehicles furnished by the German burgomeisters. In some areas where the operation was not far from camp, wood was hauled with horses—even oxen and milk cows.

The Germans had used the forest as a relatively safe place to store all kinds of war material and equipment. Army intelligence apparently knew about this and large numbers of incendiary bombs were dropped on forested areas where war stores were believed to be hidden. The forests suffered from these bombs far more than the outside world realizes.

And it is a mistake to believe that German forests won't burn. In the area between the Elbe and the Wieser rivers, and east to the Russian Zone, several thousands of acres were burned over. This area was covered mostly with Scotch pine, much of it less than 30 years old. The dead timber has been salvaged for fuelwood —even the stumps have been pulled up. It is difficult to get a fire started in a beech or oak forest in Europe, principally because the ground floor is kept clean. But it is safe to say that a young forest of pine or spruce will burn in Germany or Holland just as easily as it will in America once a good wind gets behind it.

Many of the younger DP's were of an inquisitive nature, and we had difficulty at times controlling them. The Germans left all sorts of war equipment scattered around in the forests of north Germany, where many of their troops made their last stand. As a result, one could find bombs, hand grenades, helmets, canteens, mess kits, broken rifles or pistols and all sorts of machinery. The DP's were always experimenting with this stuff. A number of bombs were set off but fortunately no one was hurt. At one location a group of Lithuanians were working some distance away. Along about the middle of the afternoon I spotted black smoke over towards this crew, and within a minute or two it had covered most of the forest. Some of the fellows had found smoke bombs and had decided to make an experiment in laying a smoke screen—which they did with great success.

We experienced considerable difficulty in getting the DP's to follow cutting instructions. One morning I went out where a group of Poles was working and found they were cutting stumps knee high or more. I promptly told them to cut the stumps down to 12 inches.

"When the Germans were in our country they cut the stumps up so," replied one young woodsman, pointing to a mark on the tree about hip high. The Poles also took great delight in cutting trees that had not been marked by the forester. And they chased more than one German forester out of the forest with the warning not to come back.

The "Balts"—Latvians, Estonians and Lithuanians—were the best workers of the lot. They were skilled in all phases of woods work and were more dependable and law abiding. However, I enjoyed greatly working with the Poles. They were interesting because they were unpredictable. For instance, when I arrived on their cutting area one morning I discovered they had not dropped a single tree. And they were excited. Working in a stand of 120-year-old beech, they had hit upon the idea of sawing a dozen large trees almost to the point of felling, and then notching them so that one would fall upon another. As I drove up they cut the key tree and started a whole chain of large trees crashing to earth. It made a thunderous noise—and the Poles were happy for the remainder of the day.

Because of coal and oil shortages, the German people developed the

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**In northwest Germany, the British are utilizing displaced persons as woodcutters—and in their eagerness for timber, are showing little regard for forest management**

# FISHING IN YOUR BACKYARD

**If your taste runs to bass and bluegills, it is surprising what you can do with a one- or two-acre pond. Here is what a fish culturist and a botanist, working as a team, found out**

By JOHN K. TERRES

SEVERAL years ago, while driving along a rural road in Alabama, I saw something that made me stop the car and back up 100 yards. Not far off the highway, within a stone's throw of a neat farmhouse, a farmer and his hired man were engaged in hauling a net full of glittering fish from a farm pond. It was too much for my curiosity. I had to get a better look.

When I got out of my car, the farmer stood up and eyed me somewhat suspiciously. He was tall and had a sweeping gray mustache. Before he had a chance to ask me what I wanted, I hastened to assure him that as an enthusiastic angler I couldn't resist stopping to look at all those fish. Mollified, the old fellow relaxed a little and, accepting the cigar I offered, bit off a piece to chew and shoved the remainder in his shirt pocket.

"Go ahead and look," he said.

The net held mostly bluegill sunfish and scarcely one of them weighed more than a few ounces. There were a few crappies and bass mixed among them, some of which might have gone four to six pounds. If this net full of fish was a pond sample, then one thing was as plain as the mole on my cheek. There were too many small fish and not enough big ones.

"I haven't caught anything but little fellows in five years," said John Saylor. "And what you see in this net is the reason why I decided to drain my pond and restock it. Then I'll get some real fishing. According to Swingle and Smith, a couple of 'fish doctors' over at the experiment station, my bass and sunfish are off balance. I've got too many sunfish. They not only eat up their own food supply and stay small, but turn to eating bass eggs."

**This farm pond in Greene County, Arkansas, supplies water for 50 cows and 10 horses—and year-round fishing for an entire farm family**

Soil Conservation Service

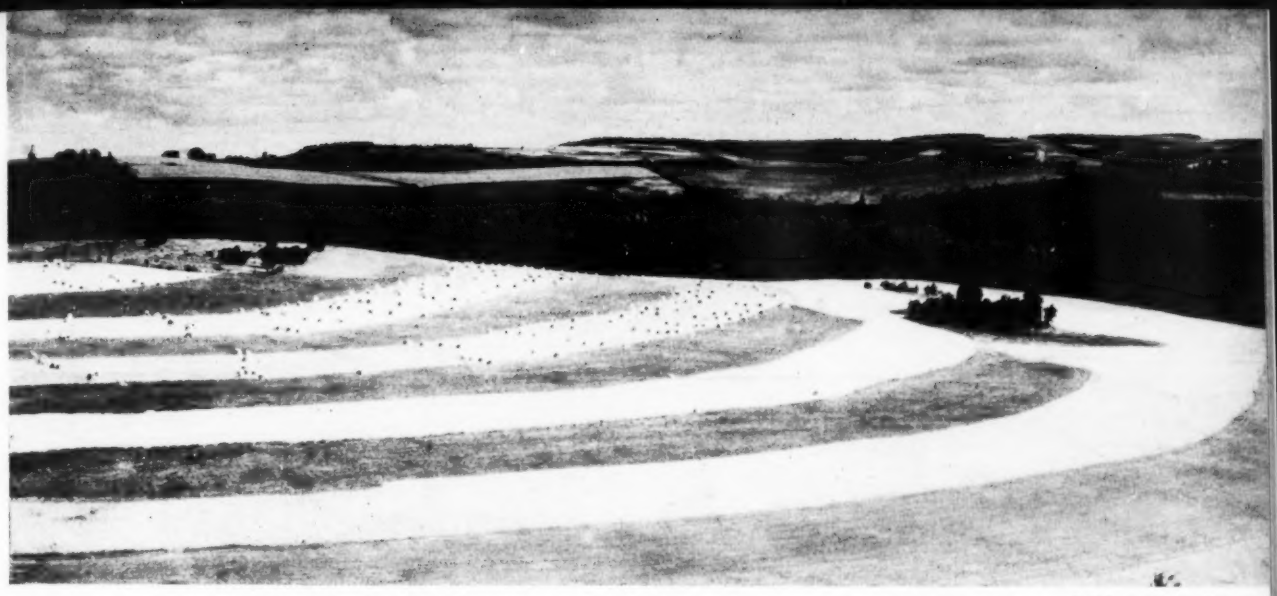
"Couldn't you add more bass to balance off the sunfish?" I asked.

"Too slow," Saylor replied. "I figure the quickest and easiest thing to do is to start all over and restock according to what Swingle and Smith have to say. Those boys have done wonders to improve the fishing around here."

That was my introduction to the work of the two "fish doctors" from the Alabama Agricultural Experiment Station. Apparently, Swingle and Smith had "done wonders" for fresh-water fishing, not only in Alabama, but also in Georgia, South Carolina, Missouri, Texas and Arizona—even in the Middle West and some of the northeastern states where fish pond owners have followed their recommendations. In most of these states, erosion silt washed from farms and ranches, or poisonous industrial wastes, had long ago ruined local streams for fishing. If a fellow wanted good fishing, it usually meant a long and often expensive trip to the nearest salt water.

But Swingle and Smith have changed all that. Their knowledge of fresh-water fish habits and new ways to manage fish ponds are bringing thousands of pond owners 200 to 300 pounds of fresh fish annually from each surface acre of water. And the owners don't have to walk out of their backyards to do it. The fish are fat and sweet, some weighing six or eight pounds, and it costs no more than ten cents a pound to raise them. Ponds that once held only 40 to 200 pounds of fish an acre now support 500 to 600 pounds. Of this total weight, 150 to 200 pounds an acre are bass—three to four times as many bass as the best natural lake you ever fished.

Ernest Deering, a South Carolina farmer, built a two-acre pond for $150 in a region almost devoid of natural fishing waters. He fertilized the pond and stocked it with 1,500 sunfish and 100 bass fingerlings (a small fish about the size of your finger) an acre. The first year his fish grew so rapidly that he caught 80 legal-size bass and several hundred



Soil Conservation Service

**Contour farming and well-managed woodlands keep the soil on the land where it belongs. Fish ponds quickly fill in with silt unless proper measures are taken to prevent it**

sunfish. A city judge in central Georgia has a three-acre pond that keeps several of his tenant farmers and their families supplied with fresh fish. Sixty families in Auburn, Alabama, pay $10 a year each to maintain a 12-acre pond. They take 3,000 pounds of fish from it each year.

Three Swingle and Smith discoveries are mainly responsible for this remarkable production:

1. Fertilized ponds will produce four or five times as many pounds of fish an acre as will streams or unfertilized ponds.

2. Too many fish in a pond result in small, stunted fish and poor fishing. If the number of fish in a pond is reduced, those remaining have more food and they grow more rapidly.

3. For many of the eastern states, most of the South and possibly the Southwest, the bluegill sunfish and largemouth bass is the best combination for stocking fresh-water ponds. Most small ponds in the East and South are too warm for brook trout and whitefish that require cool, spring-fed ponds where the temperature stays below 70 degrees.

Back in 1935, H. S. Swingle, a fish culturist, and E. V. Smith, a botanist, got together at the Alabama Agricultural Experimental Station at Auburn. Both are ardent fishermen and they were disgusted with the poor fishing in Alabama waters. They couldn't take the erosion silt out of Alabama streams that caused poor fishing, but they had another plan.

At the experiment station they set up a series of tests in ponds from two to twelve acres, in which they tried various ways of stepping up fish production. Each of the experiments ran from one to three years, after which each pond was drained, the fish counted and weighed, and another trial started all over again. From these experiments, spanning more than 10 years, the most successful combinations of fish and fish-pond management practices were developed.

They first learned that an ordinary chemical fertilizer scattered in the pond will almost immediately increase the production of microscopic plants and animals, collectively known as plankton. Water insects feed upon the plankton; the forage fish (sunfish) feed upon the insects; and the carnivorous fish (bass) feed upon the swarming young sunfish. Fertilizer is applied throughout the summer at intervals of about three or four weeks. Within a few days after the first application of fertilizer in the pond, the water develops a murky green or brownish cast from the myriads of plankton. Eventually, the pond owner will be unable to see his hand held a foot or more below the surface because of the developing fish food. If he can, it is time to add more fertilizer.

Contrary to a long accepted belief, water weeds do not help the fish pond. In fact, weeds make fishing difficult or impossible. They also hide the young fish from the larger bass so effectively that the pond may become overstocked with small fish. The Alabama experts found that the plankton-filled waters will shut out sunlight and slowly kill water weeds growing below the surface.

Hiram Wright, a building contractor, has a fish pond in eastern Pennsylvania that in five years was so choked with weeds there was scarcely any fishing. In one year he rid the pond of weeds by scattering commercial fertilizer in the pond every few weeks. The following year the fishing was much improved.

From their tests of various kinds of fish, Swingle and Smith found that the bluegill is the ideal forage fish for ponds. It multiplies rapidly, supplying young fish for the larger bass to feed upon and is itself good to eat. During the first year, each pair of sunfish will produce about 4,000 young.

The largemouth black bass is the best warm-water game fish to combine with sunfish. It is a hardy fighting fish, providing excellent sport, and it controls the population of both the young sunfish and young bass so that each kind makes satisfactory growth.

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**Plenty more where these came from—a 48-acre pond in Coleman County, Texas**

E. W. Jenkins

By PHILIP H. BAILEY

IT IS not unusual these days for movie audiences to sit tense in their seats while on the screen before them actors flee through smoke-filled woods with crackling flames licking at their heels. So realistically staged are these forest fire scenes that after the drama of the moment has passed one might well wonder if it is good business to burn the forest, even for such thrilling entertainment.

The answer to this is that the forest is not burned. Thanks to the clever tricks of Hollywood special effects men, forest fire action can be filmed on a sound stage without endangering a foot of real forest.

While special effects men at the various studios employ different techniques, the main thing they have in common is that the actual fire is done in miniature. To get actors to appear in the midst of the flames they use a miniature fire, greatly enlarged, on a process screen behind the players—or they can resort to trick photography, which is rather complicated.

Miniature forest fires are filmed on studio backlots or ranches. They may cover 50 square feet or an acre, depending on the effect desired. Trees, roads, cabins and other objects appearing in the model scene are constructed to an exacting scale, usually ranging from one to two inches to the foot.

The miniature forest must burn realistically, of course. After much experimenting a special effects man found that he could make effective model trees by using dry yucca stalks six to eight feet high. Into these were inserted manzanita branches. Hundreds of these trees were handmade and "planted" over a large area. Throughout the miniature forest pipes were concealed in the underbrush to spray a mixture of kerosene and alcohol into the air.

For this particular scene the story called for the hero to paddle a canoe down a rapids while flames licked at the banks and sent blazing embers splashing and steaming into the water. The stream, several feet wide, was made along the edge of the lilliputian forest. An irregular track, for the low camera dolly to ride, was laid parallel with the stream and forest.

After weeks of preparation the day for the dwarf fire arrived. Water was pumped through the small stream. The movie "woodsmen" adjusted the trees and rocks along its banks. Back in the forest the inflammable manzanita branches were lighted. Powerful fans were started to blow the flames towards the water and camera.

"Roll 'em!" yelled the special effects director, as the blaze grew nearer and hotter. Protected by an asbestos suit, the cameraman started his camera, which, except for the lens, was also wrapped in asbestos. The inflammable fluid was sprayed into the little woods and the cameraman began his weird ride over the irregular dolly track. Thus the inferno was filmed with the camera going through all the jolting movements of a canoe shooting the rapids.

A few days later came the problem of matching this miniature action with a full-scale scene on a sound stage. In the background of the stage set was a big translucent screen about 36 feet square, made of a cellulose material. In the foreground was a long, shallow water tank. In it a movie actor was sitting in a canoe, which was firmly anchored by hidden wires. The camera was stationary this time so that it would film only the player in the canoe and a portion of the background screen.

**When a movie director barks "Make me a tree!" Hollywood's "green men" never turn a hair. Making trees is their business—in fact, it is no trick for them to build a forest**

How a tree grows in Hollywood. Carpenters line up hoops as shown above, following a model

Skeleton of gnarled old tree starts to take shape as hoops are covered with strips of lath

Live limbs are fastened to artificial trunk which gets a coating of plaster of Paris

Paramount Photos

Finished tree affords shade for Bing Crosby while catching up on current events between sets

About 80 feet behind the background screen was a projection machine. When everything was ready the projector flashed the moving action of the blazing timber on the process screen. The camera began rolling; the actor started paddling; and assistants sent waves of water rushing through the tank to make it appear like rapids. When filmed, this creates the perfect illusion of the actor abreast of a real forest fire. The moving action of the blaze on the background screen does this.

For additional action the scene was cut to where a blazing portion of a tree fell near the player. Another view had a bit of flaming brush in the foreground to make it appear as if the fire had breached the stream. Pieces of dry ice were thrown into the water for steam effects and smoke pots on the set added to the burning terror. Between takes the make-up man smeared the hero's face with soot and artificial sweat.

With some variations this same technique has been followed to make numerous scenes in which players appear to be in the heart of a forest fire.

Some special effects directors have tried the more difficult technique of trick photography to obtain the same results. A miniature blaze also is the basis for their timber fire, but the players are filmed on a blank set. Then by matting out the background and foreground, and using an involved system of double or triple printing, they get a finished film that may have stars in a holocaust.

Besides their use for forest fire episodes, miniature trees are used for decorating model sets where auto wrecks and explosions are filmed. Howard Lydecker. Republic Pictures special effects director, reveals that his craftsmen generally use parts of real trees to make the models.

Pine types of trees are made from dead yucca stalks about three feet high. With these serving as trunks, juniper twigs are stuck into them. Sometimes a well formed juniper branch alone will make an effective miniature.

Model tropical trees are made by using yucca stalks or suitable juniper branches for trunks. To the branches of these pressed fern leaves are attached for foliage.

These natural types of miniature trees will last about two weeks, while some of the strictly artificial models can be photographed many times. Cheesecloth, plaster, sponge and paper go into designing these.

In all of the studios' property departments are men whose job it is to handle natural-size trees and plants for movie scenes. These propmen are nicknamed "green men." Some of the tricks they perform to accomplish a director's woodland whim on a sound stage are amazing.

In studio nurseries are a variety of live trees, ranging in size from three to thirty feet. There are evergreens, palms, fruit trees and small shade trees. They grow in heavy wooden boxes and can be carted onto sound stages or used in outdoor locations. There are mobile cranes to aid in "planting" them, while still in their boxes, on movie sets.

During the filming of "The Ghost and Mrs. Muir," Nick Kalten, 20th Century-Fox's head green man, got an order to supply a monkey puzzle tree for several important sequences in the drama. One is where Gene Tierney hates the tree so much that she chops it down. There was a record in Kalten's files of the studio once planting an *araucaria imbricata*, commonly known as the monkey puzzle tree, but it wasn't in the nursery. Finally, after searching the studio's 365 acres, a monkey puzzle tree was found in a tangle of growth on an outdoor jungle set.

The results of mixing portions of live trees with artificial tree parts

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**Millions of people saw this grove of studio trees without suspecting the truth—that they were studio manufactured with the limbs held in place by guy wires. Gypsum supplied the snowy effect**

Jack Woods

# Meeting Red Maples

By JOHN W. BRAINERD

To be friends with red maples is like having a genuinely warm feeling for "the man on the street." Your humanitarian liking for just average, run-of-the-mill people does not extend to all individuals who jostle you at the meat counter; yet, on closer acquaintance you might develop a sympathetic interest in almost any one of them. So it is with the common red maple. Most of them are just red maples, neither to be stared at nor embraced. But certain trees which you meet repeatedly will soon appeal to something within you. They become your friends.

The following few musings of mapliana are not meant for the edification of professional botanists who know very well what to look for when they meet a tree in the course of their work. "It's just a red maple" is the natural thought of the forester making estimates of merchantable timber; he prefers more valuable species easier to handle and yielding higher quality lumber. And the taxonomist collecting specimens can be expected to mutter "*Acer rubrum*—twigs opposite and red, leaves slightly pubescent beneath" as he passes by; if he had wanted a specimen he could have got it in his own backyard where the swamp was partially filled for the new housing development. No. These musings are meant for those people who may have met maples but have not yet made friends with them.

When individual red maples stand out in my memory, they are not usually the exceptionally large ones—like the one I at first mistook for a sugar maple. My earliest recollection of a particular red maple is that of a rather small tree which we children called The-Tree-at-the-Corner-of-the-Clothesline. Apparently its location, well adapted for a game of hide-and-seek under maternal eyes, was of primary significance at first. When we reached a more scansorial age, such trees appeared more three-dimensional, each one a challenge to be climbed and claimed by carving an initial near the top.

Until I was seven, that particular tree remained unconquered. Then one day the tree was mine. But on the way down, my foot jammed in one of those sharp forks so typical of red maples. No matter how I struggled, my shoe was held fast. Perched heron-like but impatient, I finally unlaced the shoe and then descended ignominiously without it. Sweat and the gray powder from the bark of the maple begrimed me as I looked up at the tree which had earned my respect by teaching me a thing or two. It was no longer just another maple; I welcomed it to my inner circle.

Another boyhood memory centers on an old red maple that blew down in the swamp; half its shallow roots stood upright in a semi-circle with their clod of dirt and, in summer, jewelweed. Those roots made an ideal fort to be defended with whatever missiles the season provided for our unfortunately unbridled militarism: green apples, hickory nuts, or snow balls. Since those days I have often wondered how many boys have their favorite wind-thrown maple in the knoll-and-cradle soil of their home swamp where tree roots lie shallowly in the poorly aerated muck, where the ground is pocked and hummocked by the uprooted windfalls long since rotted.

The chances are that you may experience a warm feeling for a particular red maple in the late summer. Bored with the homogeneous greenery of August, you instantly respond to the brilliant red of the tree at the edge of the marsh below the bridge, first obvious sign that stimulating autumn days are coming.

Perhaps in early spring your attention will be drawn to the gnarled maple by the gate at the lower end of the garden. Squirrels are nibbling the red buds and cut twigs fall to the ground. Will the tree suffer from such extensive pruning? You count the damage at your feet, then gaze upward at the myriad of bud-knobbed twigs, reassured that this spring-impatient tree can well afford contributing to the squirrels' diet. As the winged fruits ripen in later spring, squirrels and finches feast again. Now you ponder the amount of synthesized protein in the seeds, "intended" for reproduction, that is lost by the maple. Apparently there is no need to worry, however: midsummer shows numerous seedlings coming up in the shade of the old tree. When spring grows into summer you may again note the useful productivity of that maple; you discover that the slender, red pedicels which bore the pendent fruit are being used as nesting material by several species of birds.

Perhaps you think you have enough good friends, all you have time for. Yet you may still like to see the throngs mill out of the theater or to be one with the quiet congregation in a church. Individuals no longer stimulate you to forge new friendships: you like "just people." Can the analogy with red maples be carried this far, to include "just red maples" collectively? I think so.

Where red maples get together, the soil is usually poorly drained—indeed it is often a swamp. Individual trees merge in a repeating pattern of vegetation with a character all its own. The maples often start as seedlings in the shade of acid-loving shrubs such as highbush blueberries, male berries, and alders which have grown up in the marshy meadow where cows used to leave deep footprints in the mud as they went down to the brook. Not until the maple saplings begin to top these nurse-shrubs does it become obvious that a maple swamp is in the making.

As the trees get older each young tree is still distinct from its neighbors but all look much alike. You enjoy the here-and-there touches of bright color above the shrub-swamp in early autumn. On the first warm days of early spring their young trunks, ordinarily light gray, become dark and moist with the first rise of sap.

Gradually the maple canopy closes over. The nurse-shrubs linger on but are doomed by the darkening ceiling. Finally, as the maples grow still larger, only the most shade-tolerant shrubs persist beneath. Catbriar twists through the dead blueberry bushes; skunk cabbage flourishes in the undrained puddles under the old trees. Ferns luxuriate in the slightly drier spots, and Canadian mayflower clambers on the little elevations around the maple roots.

A swamp of red maples can indeed be enjoyed as an entity in itself at any season, especially as a colorful throng to be seen from the road in autumn or as a green sanctum to slip into unhurriedly in summer.

Yes, even the common red maple has much to recommend it for your friendship. Just how you make that friendship is up to you.

# SWEET GUM FROM THE SWEETGUM

**"Not good even for kindling wood," southern farmers used to say ruefully of the sweetgum. Then came the war and demand for American storax—and the farmers changed their tune**

By CHARLES R. ROSS

SWEETGUM (red gum to the lumberman) is one of the most common hardwoods of the South. Few if any trees have ever matched its remarkable climb in market value. It is a wood that often rivals walnut and mahogany, though not so readily recognized, for gum is capable of versatility in appearance.

The reputation, however, is maintained by limited numbers of a species comprising nearly 10 percent of the timber stand in a half dozen states. "Those durn ol' gums—what can a feller do with 'em?" asks the farmer surveying the gum sprouts springing up, hydra-like, in his pastures and cutover woods. The sawmiller can't be counted upon to take the rough, sappy gums when he cuts the farm timber, even though the war market lowered his sights considerably. "Firewood," someone suggests. "Can't use that much," replies the farmer. "Besides, ever try splittin one?" Great numbers of sweetgums are too limby or crooked for the present timber markets.

**Fresh streaks are cut on the gum trees every two or three weeks**

Stan Bentley

Clarke County, tucked into a big V formed by the junction of the Alabama and Tombigbee rivers in Alabama, might be termed the hub of the gum tree universe at the present time. Gently rolling, with well watered bottomlands everywhere, it approximates the ideal for sweetgum growth. Gums are there in great abundance. But enterprising Clarke farmers are no longer scornful of the legions of lower grade gums scattered over their untilled lands. They just can't continue to look down on something that has risen rapidly to fourth or fifth rank as an income producer for landowners of the county. That's the story in Clarke. Sweetgum trees, including the limby, unshapely, hitherto despised types, have suddenly found themselves in a new and different economic atmosphere, rubbing elbows with the tall, proud pines, with cotton and livestock.

How did it happen? A number of circumstances has given rise to a rather unique industry. It is the production of storax, a fragrant, balsamic gum that exudes from the bark of the sweetgum and is used in medicinal and pharmaceutical preparations such as adhesives and salves. It is also used for incense, for perfuming powders and soaps and to flavor tobacco. Important chiefly in the perfume and drug trades, storax has been supplied for decades from China and Asia Minor, where there are closely related species of the same family *Hammamelidaceae* (the witch hazel family). Labor is cheaper in China and so long as shipments could be made uninterruptedly, there was small opportunity for developing American storax. The rapid rise of storax production in this country dates from 1937, the year China was invaded and when Japan's militant policies first threatened the trade routes to the Orient. Although the Rising Sun has been set for almost two years, the demand for American storax continues good. The best information available leads to the belief that Clarke County is now the highest producing area in the United States, and that up until quite recently the bulk of American production came from this and three neighboring counties of southwest Alabama.

The reason the business took root here can be attributed to several factors. Undoubtedly the maximum flow of gum is obtainable in the warm, moist area along the southern margin of the tree's American range. Another factor would be the opportunity-alert farmers of Clarke County. Collecting storax requires lots of elbow grease, not to mention the back and shoulders, or the leg work to reach hundreds of scattered trees over a terrain that is almost entirely mountainous. Clarke farmers are not allergic to hard work. When the war brought shipbuilding jobs to Mobile, 60 miles away, many worked nights in the shipyards, farmed in the daytime, and used the rest of the time for sleeping and commuting.

Another factor that probably gave the business impetus was the fact that some operators had produced storax during the first World War period and for a time afterwards. Thus there was a background of experience.

C. W. Skipper, a Clarke County farmer whose storax collecting has grown until it is now his chief farm operation, smiles when he recalls the first World War period. "Storax got up to several dollars a pound at one time," he relates, "but I was too busy raising 40-cent cotton to fool with it. When the bottom dropped out of cotton I started working gums, even after the prices went down to 30 cents a pound."

Actually, the name "sweet gum" seems more appropriate for the product than the rather unfamiliar term storax. Years ago, country boys used their knives to dig out bits of the

exudation from wounds in sweetgum trees. In this manner they obtained their chewing gum.

Were the reader to have some storax put before him, chances are he would think, "What a delightful fragrance; I'd like to have some of this stuff around just so I could get a whiff of it occasionally." The interest of the Chinese in using storax and developing it for commerce is readily understandable. The Chinese have always had an appreciation of incenses and fine aromatics.

At first thought, it might be natural to regard the working of gums for storax as an operation similar to turpentining. In a general way it is. A 200-year-old industry like naval stores naturally has methods and equipment that are fully standardized. Storax producers do not follow exactly the same procedures and the very little equipment they employ is more or less home-fashioned.

O. C. Helms, county agent of Clarke County, can sketch a better picture of storax production than anyone else. As the product has risen in importance in his county he has given increasing attention to the problems of obtaining better yields, conserving the operations, and marketing wisely.

A farmer seeking information from Helms on how to work his gum trees for storax would be told: "Storax is produced from sweetgum trees only. Yearly yields of one-half to one pound a tree can be expected with efficient operation. The yield per tree seems to be in direct proportion to the green leaf surface. Often trees that are forced or have short stubby trunks and big brushy tops are no good for timber production but produce profitable amounts of gum for sale.

"Operation in a new grove (or orchard as it is called locally) gets under way in the spring about the time the leaves reach full size. Production is started by peeling trees from eight inches and up in diameter. On trees up to 18 inches, a bar of bark four to eight inches wide should be left undisturbed. The other bark is cut in a ring about two feet from the ground and peeled down to the ground. Care should be taken not to bruise the wood.

"After peeling it is necessary to scrape the gum from the face every 14 to 21 days, and then at the upper edge of the face put a new ring in the bark, cutting only a thin slice, preferably a quarter to three-eighths of an inch. The original ring and this regular cutting is done with a tool made by local blacksmiths very similar to a turpentine hack.

Stan Bentley

**County Agent O. C. Helms (left) and Producer C. W. Skipper with the product, a chocolate-colored gum that solidifies like beeswax**

"The gum is collected by scraping it from the face of the tree with a cup made from sheet metal or valley tin with the front or scraping edge reinforced with a piece of heavier material. It is not necesary to use a cup on the tree as is the case with turpentine production, as the gum balls up and sticks to the face.

"In Clarke County one man can operate 1,500 to 2,000 trees a year. One tree will continue to produce three to five years, and young healthy trees will then grow new bark all over the face and continue their growth for lumber or pulpwood purposes.

"When the gum is scraped into a small container it is usually transferred to five-quart oil cans with home-made handles. When collected in sufficient amounts it is heated over a slow fire made in a trench in the ground, with constant stirring to prevent scorching.

"Processing for market, which includes heating, straining, and canning, is the most tedious operation in the production of storax. High flames must not come near the gum, as it is very inflammable when hot. When all the gum in the container is thoroughly melted down to a thickness of molasses it is strained into 50-pound lard cans, ready for shipment."

Helm's thoughts naturally reflect the apprehension of his farmers that temporary strong demand will lead to overproduction, thereby causing prices to drop so low that the work would only be followed by persons whose econmic opportunities are very limited. Clarke farmers know that gum trees are abundant; they realize that production could increase considerably from one season to the next. They remember when prices were so low as to make operations unprofitable.

At the present time many Clarke families depend upon storax for a substantial part of their living. The estimated yearly value of this forest product shipped from the county is around $200,000.

While efforts have been made by Helms and by the Extension Service to gain a better idea of the capacity of the market, it has proved somewhat difficult to obtain a well-rounded picture. However, all indications point to a limited market. An official of one of the biggest buying concerns has said, "While very little quantity of the Asiatic storax is available, substantial quantities of the American sweet gum are not only being shipped from the state of Ala-

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# THE WOODS CAME TO US

By NAOMI STEVENS

**Being marooned on a treeless lot didn't suit this New York couple at all—so they set about creating their own "forest"**

IT is unfortunate to have a personality that loves trees and forests and be compelled, through circumstance, to dwell on a 60 by 100 foot property in a suburb near New York City. Unfortunate, that is, unless you have the urge to overcome it in part by bringing a miniature version of a forest into your own garden. That is what we did.

At the time we acquired the property about 30 years ago it was practically a hayfield. The only original shrubbery on the place was a row of alternating forsythia and deutzia bushes which had developed a wild appearance from neglect, a lilac shrub, and a small privet hedge. The place looked barren but it had possibilities, I thought, if I could get my husband interested in it. A life-long city dweller, he knew very little about gardens.

You know what they say about an ill wind—well, it hit us during the depression years. Through an enforced idleness, my husband developed an interest in the grounds to the extent of taking a course in landscape gardening. Before completing the course he had won honors three consecutive years in the New York *Herald-Tribune* annual garden contest for possessing the best garden in the community.

From the time we purchased the house to the time of the contest, the privet hedge had grown to enormous proportions. So we decided to rip it out in the front and replace it with barberry. Our next step was to remove the deciduous shrubs which took about 10 feet of space from the back garden, and finally the privet hedge on the rear of the property. We had let this hedge grow rather high for privacy, but found that it was hogging too much space. In its place we planted a row of American arborvitaes.

Then in the front we planted two gold-tipped arborvitaes backing a magnolia. Next to this grouping, going toward the rear, we planted a rhododendron, andromeda and a mountain laurel backed by four redcedars. This was followed by a boxwood in its natural shape—and on either side of this we set out flame azaleas. The space between these and the rear arborvitaes was filled in with Japanese red maple and native white dogwood. The latter was planted to accommodate a neighbor who wanted shade in front of her kitchen window.

Our garage stands at the head of the driveway in the western corner of the garden. Next to it we built a rustic pergola of six-inch cedar logs and roofed it with two-inch cedar saplings. Under it and beyond the sunken posts we put in a brick terrace. In the center of the pergola a brick fireplace was built. This had a very high chimney so as not to damage the cedar saplings. The saplings also form a rustic fence on either side of the fireplace.

The remaining space in the back contains a rock garden with a natural rock retaining wall facing our neighbor. On top of this we planted four spreading Japanese yews for a background. Then, with our neighbor's permission, we planted a cut-leaf weeping birch in his yard to provide an accent to the pergola and dark yews beneath it. In the corner of the rock garden, the end of our property, is a sulphuria and, half down its slope, an andromeda. To the right of this on a lower level stands a mugho pine.

From this point an uneven flower bed follows the curved edge of the terrace in a convex arc, which ends at the brick pathway that leads from the house to the pergola. The bed contains among other flowers, tall-bearded iris in shades of purple and white. These stand a little behind and on either side of the base of a pink dogwood. Next to them are two

small hynoki cypress, one diagonally behind the other, more bearded iris, and finally some rose bushes. At the corner base of the rock garden, another flower bed follows along the arborvitae hedge. In this corner is a group of azaleas ranging in hues from the deepest cerise to pink and white. This spot is breath-taking in the spring with the pink dogwood silhouetted against the light-green, feathery foliage of the weeping birch, the dark green of the yews, and the deeper tones of the azaleas.

In the square of space situated in front of the eastern wall of the garage, the back walk of the house and the western end of the pergola, we built another rock garden as a background for a pool. The back of this, our upper rock garden, also has a natural rock retaining wall which starts at the edge of a walk that extends across the back of the house.

In the soil bed at the beginning of this three-foot-high elevation, a hemlock stands in the eastern corner. Next and west of it is a juniper at the base of which are stone steps descending from the rock garden to the walk. The stone wall ends at this point, for next to it is another small terrace of bricks, shaded by a European linden. This is our breakfast nook and cool spot on very hot days.

The pool is eight feet square with a woodland effect on two sides. To complement the weeping birch, a native white birch stands at the northwest corner of the pergola and drapes itself over the pool. We decided not to grow vines because there is enough shade there for comfort and we have found out that vines can become very unpleasant after a rainstorm.

In order to insure complete privacy from the street for sun bathing and dining outdoors, we planted another magnolia, a blue spruce and and a hynoki cypress. These form a complete screen across the front lawn. Viewed from the pergola they form a V-shaped distance point of variegated shades of evergreens, for this group ends where the redcedars begin. Add to this the front magnolia looming above it, then picture about 75 feet of lawn space in between, and you have an illusion of distance.

Since our main entrance is situated in the middle of the eastern length of our house, the sun-porch off the living room faces the street, and is less than 15 feet away from it. As it is all windows, we also wanted some privacy here; so a hemlock was planted at either corner of the sun-porch with a spreading yew in be-

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**Once started, the Stevens "forest" grew rapidly. A rustic pergola was built, trees set out. Their cut-leaf weeping birch is shown above**

**A rustic cabin in Vermont? No, just another view of the Stevens backyard. That's dogwood and hynoki cypress in the foreground**

**Cross-section of the completed "forest," an oasis in suburbia, which neighbors regard as an inviting spot on a hot, sultry day**

# WASHINGTON FORESTS IN TRANSITION

## FROM WASTEFUL EXPLOITATION TO INTENSIVE MANAGEMENT

By BURT P. KIRKLAND

THE SUMMIT of Washington's segment of the great Cascade Mountains, extending north in an unbroken chain from the Columbia River to the boundary between the United States and British Columbia, and rising to elevations from 3,000 feet, at the lowest passes, to about 7,000 feet (excluding a few superposed volcanic cones), divides the state into two distinct climatic provinces, differing both in rainfall and temperature. About 60 percent of the state's land area is in the eastern, and 40 percent in the western province.

West of the summit, where the waters flow directly into Puget Sound, the lower Columbia River, and the Pacific Ocean and its minor connected bays, the rainfall is heavy, on the average; but it normally varies from as low as 20 inches in the shelter of the Olympic Mountains, to 100 inches along the Cascade Mountains' west slopes, and to about 160 inches close to the ocean.

Moisture-laden winds from the Pacific Ocean drop much of their burden in this area, because of release of pressure and cooling as they pass over the foothills and mountain slopes. As they pass down the eastern slopes, increased pressure heats these air masses and expands their capacity for moisture, so that all lower altitudes of eastern Washington are areas of low rainfall, especially in summer. Surrounding these areas is the rim of the Columbia Basin, where there are higher altitudes with heavier rainfall.

These climatic conditions have been described in some detail because they constitute the principal explanation for marked differences between forests of western and eastern Washington. On the west side, forest stands are often very heavy and originally occupied more than 90 percent of the land area. The non-forest areas consisted of barren rocky areas in the mountains and a few prairies and marshes, mostly at lower altitudes. Although present everywhere on the west side, forests vary in species composition, according to rainfall. On the drier sites, particularly in the Puget Sound and Cowlitz valleys, Douglasfir predominates. On the more moist sites along the Pacific and middle and higher mountain slopes, a richer mixture of species, still often including Douglasfir, but with spruce, hemlock, true firs and cedar as very important components, is commonly found. Sandy and gravelly soils favor Douglasfir even within the moist belt.

Other topographic features have had great influence on the development of the state's forest industries. Western Washington, though including many rough and remote areas, had large areas of forested lowland. Deeply indented by the waters of San Juan Straits and Puget Sound, by Grays and Willapa harbors, and bounded by the lower Columbia River, it has hundreds of miles of shore line formerly lined with heavy stands of Douglasfir, western redcedar, and other coniferous species.

More than 60 percent of eastern Washington is devoid of forest vegetation. Most of this treelessness dates from pre-

**Natural reforestation in western Washington is rapid under favorable circumstances. Picture at left shows cutover Douglasfir area—center picture, the same area five years later**

historic times and is due to deficient rainfall, and very little is due to land clearing by human agencies. Only about 30 percent of the land area can be properly classified as now constituting, or being suitable for, commercial forest. Much of the forest occupies very rough terrain, often remote from settlement. Only the altitudes from about 1,500 feet up have sufficient summer rainfall to support forest vegetation. Stands are generally much lighter than in western Washington. Ponderosa pine, occupying the lower altitudes of the forest belt, is the most valuable species of wide distribution. Engelmann spruce, western white pine, western larch, true firs and western redcedar occupy the more moist sites climatically. Distribution is influenced further by soil conditions. Outside the main forest belt, bottomlands along larger streams are occupied by cottonwood and a sprinkling of other species.

A brief summary of areas and sawtimber volume confirms the above descriptions.

| Land Use Items | West Side | East Side | Total |
|---|---|---|---|
| | *(Thousands of Acres)* | | |
| Available commercial forest land | 11,212 | 8,662 | 19,874 |
| Unavailable* commercial forest land | 824 | 232 | 1,056 |
| Forest land chiefly valuable for purposes other than timber | 1,439 | 1,731 | 3,170 |
| Non-forest land | 2,419 | 16,347 | 18,766 |
| Total land area | 15,894 | 26,972 | 42,866 |

*Parks, etc., timber withdrawn from commodity use.

The total timber volume and the species composition of any forest is of great importance economically, and silviculturally. Some species are of superior technical qualities for manufacturing, better adapted to a few or many uses, and consequently of higher sales value than others. Invariably, growth and resistance to insects and disease is greater in mixed stands. Moreover, association of light-demanding and shade-enduring species generally improves the quality of the former, while the latter utilize soil productive capacity and otherwise may be diverted to worthless vegetation. The coniferous species of both parts of the state meet these economic and silvicultural requirements to an unusual degree, on most sites. As of 1945, the total stand is estimated as follows:

| Species | West Side | East Side | Total |
|---|---|---|---|
| | *(Billions of board feet)* *(Available timber)* | | |
| Douglasfir | 65.3 | 11.2 | 76.5 |
| Ponderosa pine | ..... | 15.5 | 15.5 |
| Other pines, western larch and misc. structural softwoods | 2.4* | 5.7 | 8.1 |
| Spruces, hemlocks and true firs | 93.5 | 7.1 | 100.6 |
| Cedars | 15.7 | .6 | 16.3 |
| Hardwoods | .9 | .1 | 1.0 |
| Total available | 177.8 | 40.2 | 218.0 |
| Unavailable timber** (all species) | 26.7 | 4.8 | 31.5 |

*Ponderosa pine included.

**Timber withdrawn from commodity use in parks, etc.

The first three items include Douglasfir and larch, which rank high in strength and are therefore useful for structural purposes, and suitable for interior finish because of their grain and color; pines, which have light wood of easy workability and pleasing appearance and, therefore, valuable in the higher grades for interior finish, softwood furniture, etc., and, in the lower, for shipping lumber. All species are useful for sheathing and similar uses in residential buildings and in farm structures. It is somewhat of a coincidence that species of this structural group also have similar silvicultural requirements—occupying sites without excessive moisture and, after regeneration under some shelter or in open spots, requiring plenty of light for rapid growth.

The third group, with western hemlock leading in pulp yields and quality, include the best species of the world for the finest grades of wood pulp, suitable among many uses for chemical conversion to rayon and similar textiles. With this group of species leading in volume, Washington

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**Natural reproduction as shown in this ponderosa pine stand (right) is a hopeful element in Washington forestry. Klickitat County is one place where natural reforestation is prolific**

KNOWING YOUR TREES

# TABLE-MOUNTAIN PINE

*(Pinus pungens* Lambert)

By WARREN D. BRUSH

Table-mountain pine obtains its name from being confined in its natural distribution mainly to the dry, gravelly tablelands, ridges and slopes of the Appalachian Mountains from southern Pennsylvania to North Carolina and to eastern Tennessee and northern Georgia. In the northern part of its range it is generally scattered among other trees such as pitch and Virginia pines, oaks and hickories but in the southern Alleghenies it often forms pure forests of considerable extent.

Generally a small tree, in some localities it reaches a sufficient size to be of commercial importance. When crowded in the forest, a height of 60 to 70 feet and a trunk diameter of two and a half to three feet is not uncommon. The fairly long, clear trunk is crowned near the summit by a few short branches forming a shallow, narrow, round-topped head. In the open it is usually only 20 to 30 feet high with a short, thick trunk frequently clothed to the ground with long horizontal branches. The lower ones are pendulous toward the extremities, sometimes touching the ground and the upper ones sweep in graceful upward curves, forming a flat-topped, often irregular head. The stout branchlets are light orange and smooth when they first appear, later becoming rather rough and dark brown.

George Washington National Forest

**Generally a small tree, Table-Mountain Pine often reaches sufficient size to be of commercial importance, with a height of 60 to 70 feet and a diameter of two feet**

In crowded clusters of two, or occasionally three, the stout, stiff and often twisted, dark green needles are about two and a half inches long. They fall from the tree during their second or third year.

Blossoms appear in April or May. The yellow, staminate flowers are borne in long, loose clusters at the base of the current season's growth, while the short-stalked purplish ones which develop into cones, grow laterally along the new growth in whorls of two to seven.

Table-mountain pine has a characteristic, heavy, egg-shaped cone, the scales of which are much thickened at the ends and are armed with conspicuous stout hooked spines. These light brown cones measure from two to three and a half inches in length. They are stemless and usually grow in clusters of three or four or occasionally seven or eight. The thin, tough cone-scales are much thickened at the ends with a prominent transverse ridge and the strong, curved prickles are incurved above the middle of the cones and recurved below it. The scales near the base are often much-thickened knobs. The cones ripen in autumn of the second season, opening as soon as ripe and gradually shedding their seeds. How-

ever, they sometimes remain closed for two or three years, often remaining on the branches for 18 or 20 years. The rounded triangular seeds are nearly a fourth of an inch long, with thin wings one inch long and a fourth of an inch wide, broadest near the middle and gradually narrowed toward the ends.

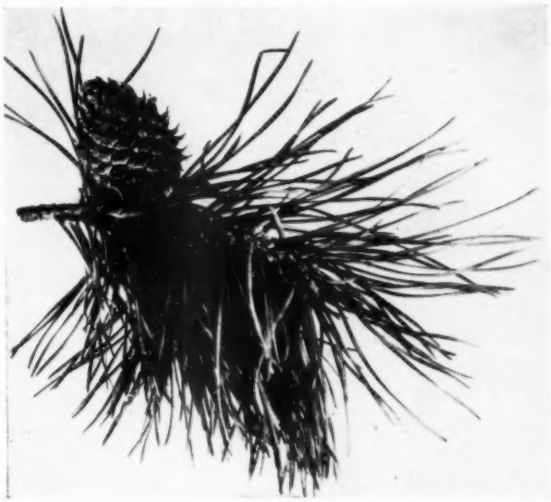
The oblong, obtuse winter buds are dark chestnut brown. On old trunks the dark reddish brown bark is from three-fourths to one inch thick and is broken by shallow fissures into irregularly shaped plates, separating on the surface into thin, loose, brown scales tinged with red. On young stems and old branches the bark is not so thick and rough but is broken into thin dark brown scales.

The wood of table-mountain pine is moderately heavy, hard, stiff and strong, a cubic foot of the air-dry wood weighing about 36 pounds. The heartwood is pale reddish brown with thick, nearly white, sapwood. It is little used except for fuel.

The tree grows rather slowly and probably does not live to be more than 250 years old.

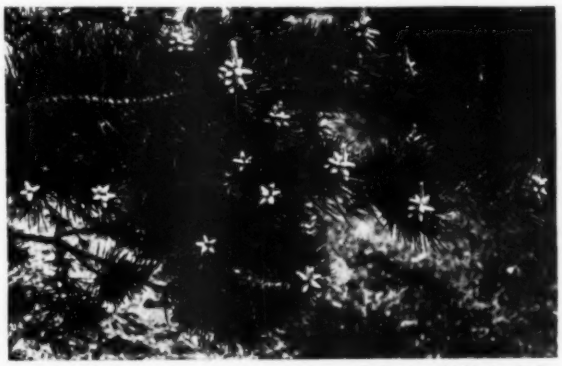
Seeds are produced at an early age. Trees only five years old and two to three feet tall can often be found bearing cones and large numbers are borne on mature trees. Although the cones shed their seeds very irregularly, large numbers fall to the ground every year and considerable reproduction takes place. It is a very aggressive tree and often takes possession of old abandoned fields and rough land unsuited for agriculture, where it serves as a protection against erosion.

Table-mountain pine does not make a suitable shade or street tree. As a single specimen, however, it may serve as an ornamental. It is attractive when young, especially when planted in the open.



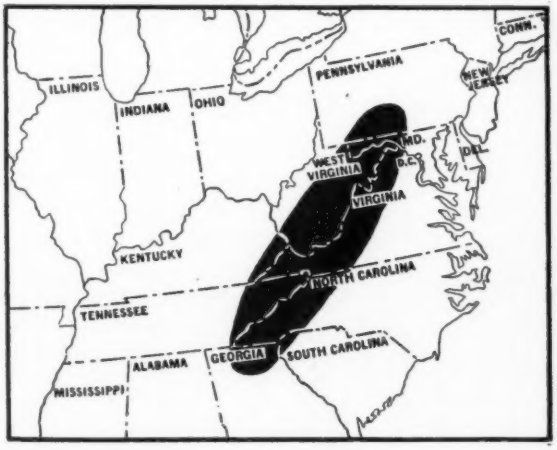
U. S. Forest Service

The heavy egg-shaped cone bears conspicuous stout spines. Stiff and often twisted needles occur in clusters of two or three



J. Horace McFarland Co.

Cone-producing flowers are short-stalked and purplish. The yellow staminate flowers are borne in long loose clusters




A tree of the Appalachian Mountains, from Pennsylvania to Georgia, it prefers dry gravelly tablelands and slopes

George Washington National Forest

On old trunks, the dark reddish-brown bark is broken by shallow fissures into irregularly shaped, scaly plates

# managing your WOODLANDS

**A page dedicated to the management of woodlands, large and small — practical suggestions in procedure and technique and in the solution of problems on the ground.**

**What is your problem? American Forests will assist you in finding an answer. Address queries to The Woodlands Editor.**

## FOREST IMPROVEMENT AT A PROFIT

### Thinning in a Pennsylvania second-growth stand yields two kinds of dividends — improved forest and cash

MANY second-growth stands, all over the country, are in need of thinnings and other cultural operations if a profitable rate of wood growth is to be maintained. The major problem confronting the woodland owner is how to utilize the trees which must come out in a thinning. They should at least pay the cost of the work. If he can make a profit on them, so much the better. But few owners have funds or the desire to make an investment in thinning and wait any appreciable length of time for it to pay dividends.

Roy McCorkle, owner of 130 acres of second-growth woodland in Huntingdon County, Pennsylvania, had just such a woodland. Approximately 50 years old, it contained an average of 6,000 board feet an acre and was growing at the rate of 170 feet an acre annually. The rate of growth, however, was declining. This, Farm Forester Frank Smale discovered when Mr. McCorkle called upon him for assistance. Intense competition for sunlight, moisture and ground space had resulted in the death of many trees, others were dying and still others—many others—were badly suppressed by the more dominant trees.

About one half the area supported a stand of white pine, hardwoods and an occasional hemlock. The other half was mixed oak. Forester Smale, who is employed by the Pennsylvania Department of Forests and Waters to aid small woodland owners in their forestry problems, saw that mixed oak stand could not be handled at a profit. In fact the material was so small that the sale of the products would not yield the cost of the operation. Consequently, he concentrated his immediate attention on the pine-hardwood mixture.

Since the work of the farm foresters, under the Norris-Doxey program, is a combination of service and education, Frank Smale invited Mr. McCorkle to go over the timber tract with him, and together they planned a forestry operation.

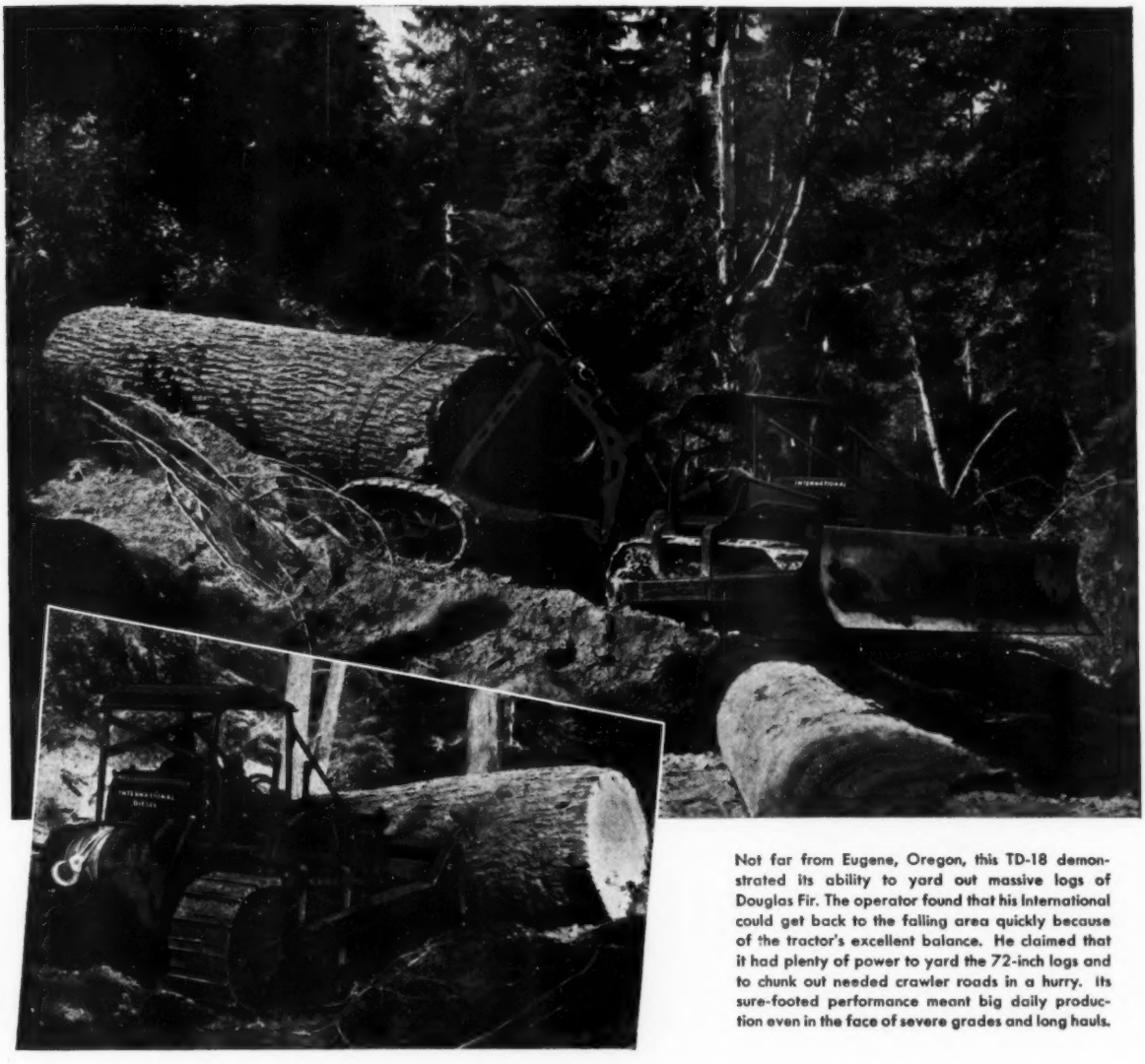
They decided to remove the large hardwood trees which had been left by a logging operation 50 years ago. These and the larger white pines were excessively limby and were taking up too much crown space in the forest. Thus they were shading out the younger trees which might otherwise be putting on vigorous and rapid growth. Further to advance the growth of the young trees and to reduce crowding, they decided to remove about 30 percent of the trees which measured between six and 12 inches in diameter at breast height. In all, 46,000 board feet of sawtimber and 52 cords of pulpwood were selected for removal, and marked with red paint.

However, marking trees with red paint, while an indication of good intentions, does nothing toward improving the stand. That is a job for the ax and saw. To do the job at a profit means more work in finding buyers for the forest products.

Two men were located to do the felling, at $8 a thousand board feet for the sawlogs and $6 a cord for the pulpwood. For these prices they felled the trees and bucked them into log or cordwood lengths. Skidding the logs to the roadside entailed another $2.50 a thousand board feet. Then came the additional cost of the sawmill operation. A local operator agreed to haul the logs to his mill, saw them into lumber and return the lumber to Mr. McCorkle's woodland camp for $22 a thousand feet. Thus the costs involved from the woods, to the sawmill and back with rough green lumber amounted to $32.50 a thousand board feet. From the first 10,000 feet of lumber manufactured, Mr. McCorkle retained 80 percent for his own use in improving his summer camp. The other two thousand feet found a steady market at $65 a thousand. In short, he real-

(*Turn to page* 427)

**Removing about 30 percent of the crowded stand left plenty of good timber for future harvests (right) and provided lumber for summer camp improvement (left) and for the market**



Not far from Eugene, Oregon, this TD-18 demonstrated its ability to yard out massive logs of Douglas Fir. The operator found that his International could get back to the falling area quickly because of the tractor's excellent balance. He claimed that it had plenty of power to yard the 72-inch logs and to chunk out needed crawler roads in a hurry. Its sure-footed performance meant big daily production even in the face of severe grades and long hauls.

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Read the roster of Tree Farm states where this program has been organized for effective action. They include Alabama, Arkansas, California, Florida, Idaho, Montana, Mississippi, New Jersey, North Carolina, Ohio, Oregon, South Carolina, Tennessee, Texas, Washington and Wisconsin. Virginia, Pennsylvania, Maryland, West Virginia, Missouri and Massachusetts are about to initiate their own Tree Farm projects, and there are more to come.

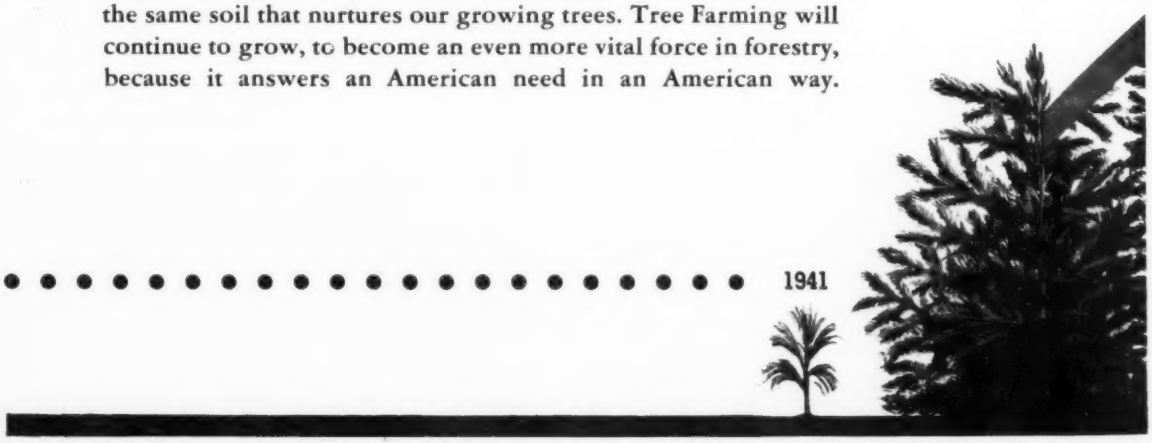
Tree Farming is moving forward with giant strides. It began as an industrial movement. Now it embraces all types of woodlands, from farm woodlots to industrial forests.

*The Tree Farmer pledges himself to manage and protect his woodlands for continuous production of commercial forest harvests.* But the Tree Farm movement does more than encourage better forestry. It interprets our forests to America. In simple terms, it asserts the truth that Timber is a Crop . . . a perpetual crop. It helps bring the public into cooperation with the man who grows the trees.

**1942**
**5,276,668**
**Acres**

Tree Farming has won its place in the consciousness and planning of America because it is sound. It is practical. It is rooted in the same soil that nurtures our growing trees. Tree Farming will continue to grow, to become an even more vital force in forestry, because it answers an American need in an American way.

1941



# *is growing too*

● Every Tree Farm program is locally sponsored and administered. For further information about Tree Farm progress, we suggest you write the American Forest Products Industries, Inc., 1319 18th Street Northwest, Washington 6, D. C.

*The Weyerhaeuser Timber Company established the first officially designated "Tree Farm" near Elma and Montesano, Washington, in the fall of 1941. Weyerhaeuser Companies are now operating eight tree farms.*

# Washington Forests in Transition

(*From page 409*)

is in the enviable position of being able to supply the world not only with pulp and paper products in great variety, but also to contribute importantly to clothing its peoples. If oriental populations ever become organized to improve their material standards of living, it is likely that these products will be in demand far beyond capacity of Pacific Coast forests to supply them.

Of the three Pacific Coast states, California has a considerable, but poorly situated, supply of the true firs, some of which are among the less suitable of the group; Oregon has a slightly smaller supply, of which only a part is well situated for early industrial use; Washington leads, with a supply equal to the other two states and with natural facilities already mentioned for concentrating at industrial sites. On the industrial use of these species hangs the possibility of maintaining Washington's forest industries with little or no slackening. All of the group are also useful for lumber, but lacking durability have to be used discriminatingly.

The pulpwood group also leads the species of the north temperate zone in silvicultural utility. On account of their ability to grow in shade and in dense stands, they are almost alone in their ability to make full use of productive capacity of the moist sites where they occur, and leave little space or light for worthless shrubbery or herbaceous plants. Mixed in right proportions, or in subordinate positions with the structural group, they help to produce clean trunks and to utilize soil productivity otherwise lost. Maintenance of good soil conditions is favored by allowing occasional invasion of broadleaf species, such as alder, when stands are under regeneration.

The cedar group is of special value for durability in contact with the soil or exposed to weather, as in posts, poles, and shingles. Western redcedar makes up most of the group in Washington. Silviculturally, they are similar to the pulpwood group.

The leading hardwoods (last group in table) are alder, bigleaf maple and cottonwoods. The first two are important furniture woods in adequate supply for northwest uses. Bigleaf maple produces highly figured burl and crotch wood. Cottonwood is valuable for pulpwood uses in soda process, for fruit box veneers and, occasionally, for lumber. Although little or no research has been devoted to it, there is no doubt that, in western Washington, alder, seeding into most new stands, is an important soil improver. It develops to log size only on moist sites. Elsewhere, it dies out, returning its wood substance as well as the leaves to the soil. This smaller material constitutes a potentially large supply of hardwood pulpwood. Bigleaf maple is a subordinate species, growing to merchantable size only on the best sites. Cottonwood reproduces on river bars and alluvial deposits, generally within stream flood plains, where conifers do not thrive.

With the favoring circumstance of large stands of timber along the shore lines of protected channels and harbors, all having direct access to the Pacific Ocean, the lumber industry started soon after Anglo Saxon settlement of the North Pacific Coast and quickly outdistanced all rivals. Even though transportation equipment of the early days was barely equal to the task of moving big logs even a short distance on land, ease of transportation after they were in the water made great quantities of timber readily available for concentration at numerous manufacturing points.

The first sawmill was constructed by Dr. John McLoughlin, of the Hudson Bay Company, in 1827, near the present site of Vancouver, Washington, principally to serve export trade. But not until the California gold rush was any substantial amount of lumber cut. The industry did not, indeed, attract much attention until the beginning of the present century. Production then rose rapidly, until Washington, by 1905, led all the states, holding the lead through 1937, with the exception of the year 1914. It is significant though that the forest resource has already served the population, of European descent, for more than 100 years, in addition to thousands of years' use by the Indians.

For nearly 50 years, the commercial aspects of Washington's forests have been paramount. Active logging operations have provided raw material from which a great sawmilling industry has grown. From 1900 to 1945, 201 billion board feet of lumber were marketed. The peak year of production was 1926 when over 7½ billion board feet were produced. During the same period, other wood-using industries have developed, of which pulp and paper, plywood, millwork (including a huge output of doors) and furniture are most important. No other industries in the state compare with this as an employer or in providing commodities to exchange with other regions for the innumerable things demanded in modern living. Without these industries, little land could have been cleared for agriculture, except by destroying forest cover with no recovery of wood products; and, without a market, little reason would have existed for developing agriculture. It would, in fact, involve little exaggeration to say that, without the rapid development of these industries, north coast cities could not have become much more than fishing villages.

Until about 1900, the forests were thought to be inexhaustible and there is no doubt that even since that time unwise cutting methods have frequently been used. No one can be positive whether the long-time problems of forest management could have been solved better by imposing rigid restrictions on timber cuttings from the beginning, or by the practice that was followed of allowing free play of individual enterprise and the consequent accumulation of wealth. Certain it is that the methodology, the equipment and the financial resources are now available to do a top-notch job of permanent development for sustained yield of the remaining untouched forests and cutover lands alike. Less evident to the casual observer is the fact that, through the processes of economic development on the Pacific Coast, in the United States, and in the world as a whole, the time has now arrived for application of forest practices only slightly less intensive than those of advanced European countries.

At this point, it is desirable to retrace our steps and consider more particularly developments in forest economics and policy that have led the state well along the road from forest exploitation to laying groundwork for intensive forest management. In the days of sparse settlement, little effort was devoted to maintaining forest productivity. Considerable fine timber was burned, by settlers, to clear land. However, the first national forests were set aside during the 1890's and, by 1905, were organized for fire protection and some other activities. In 1907, the Washington Forest Fire Protection Association was organized by timber owners, and protection of mature timber was started.

Since that time, fire protection has continuously increased in efficiency. In the early years of this century, summer skies were always filled with a pall of smoke, reducing the sun's visibility to a red ball of fire or obscuring it entirely. Of late years, the atmosphere has been reasonably clear. Occasionally, fires still get out of control, and the annual

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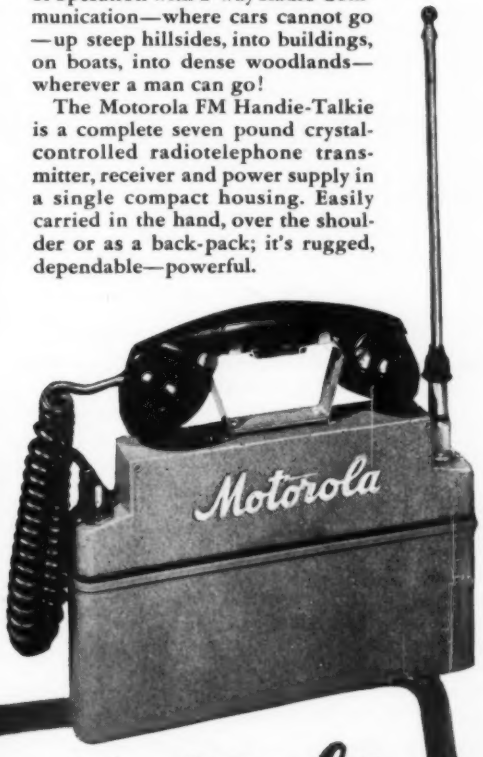


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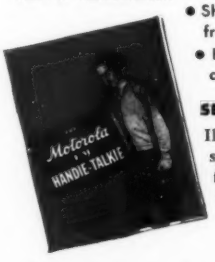


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burning rate needs to be reduced further. Very important in this connection are logging practices that will leave less timber on the ground and cutting practices that will leave less concentrated slash. With the aid of these measures, slash-burning to reduce fire fuels should become less necessary.

Although there was already some state legislation, in 1907, covering trespass and fire, the development of state fire and other forest regulatory legislation may be considered to have dated from organized effort by interested citizenry then begun. In the 39 years down to date, a notable forest code has resulted.

In plans for completing the transition to intensive management, the nature of the problems to be solved should be clearly understood. It has been noted that most of the timber used in the state comes from sawlog size trees. Very important is the relation of annual cut and annual growth. In 1944, about 5.4 billion board feet of such trees were cut. Less than .1 billion came from trees under sawlog size. Engineering cost studies prove that harvesting small sawtimber and pole size trees costs much more, per unit of volume, than larger trees. The added cost of growing larger trees is insignificant, compared with cost reductions in harvesting them. Fire, insects and diseases took about one-fourth billion board feet, additional. As the available sawtimber stand shown in Table 1 is about 218 billions, the rate of cutting was close to 2.5 percent of the standing sawtimber annually. This may be three to four times the rate of growth calculated by the U. S. Forest Service. Is this a dangerous condition?

To throw light on the answer, let us look at the comparable situation in North Carolina, where cutting has been going on for 300 years. North Carolina has about 41 billion board feet, counting all conifers above nine inches, and hardwoods above 13 inches, d.b.h. From this, it cuts, on the average, 2.4 billion board feet (or equivalent) annually, which exceeds 5.8 percent of the growing stock. But this corresponds closely to the rate of growth.

Why is a 5.8 percent cut equivalent to the growth in North Carolina, while a 2.5 percent cut is three or more times the growth in Washington, the growth and the cut having been computed in both cases by the U. S. Forest Service? The answer is that 300 years use of North Carolina forests has removed most over-mature or decadent elements (there are still billions of board feet of cull trees and surplus younger trees), while, in Washington, old forests are full of decadent elements and young forests contain surplus trees, contributing little or nothing to growth on an acre basis. How can the situation be improved in Washington forests and, at the same time, avoid some of the mistakes of management in older states? Creative cutting practices provide the only sound solution.

In the February 1946 issue of AMERICAN FORESTS, this writer discussed the methods by which production of big timber can be made permanent on the superior timber-growing sites of the West, such as those of western Washington. To insure this, the growing trees in old stands must be preserved and accelerated in growth by removing competing non-growing decadent elements. Net growth per acre will increase if trees now losing growth are removed. In the meantime, young stands need repeated thinnings to prepare them, by age 100 years, to yield big timber by continued selective cuttings for another 50 to 100 years before final cutting. This new growth must be depended on for high-quality material for use following final removal of old timber. In the May issue, it was further shown that, in the Douglasfir region, all these types of partial cuttings added to legitimate clear-cutting would result in a total yield equal to, or greater than, present requirements. This explanation of creative cutting shows how to convert the standing timber of the state from its present low rate of growth to active growing condition.

On the better sites, in western Washington, growth per acre is much faster than in North Carolina. But, in the latter, a maximum stand of only 10,000 to 12,000 board feet an acre is required to produce maximum growth, not forgetting production of a due proportion of good quality timber; whereas, big timber production in western Washington can be best carried on by the use of stands cruising, on an average, 30,000 board feet or more an acre. While it is feasible in North Carolina to obtain utilized annual growth of five to six percent on the growing stand, in western Washington 2.5 to 3 percent is about all that can be expected on the much larger growing stock. These volume relationships control financial returns only in part, as these stem from complex relationships between past financial history, present operating conditions, and future prospects.

In eastern Washington, average ponderosa pine stands of 7,000 to 12,000 board feet an acre are needed to keep production at a reasonably high level. On these, growth rates to date have not exceeded 1 percent annually. On the more moist sites, occupied by other species, somewhat heavier stands and faster growth may occur. Production there can never be a large percent of the state's total. During the period of converting stands to active growth, the cut must necessarily exceed growth by a rather wide margin, and the longer conversion is deferred, the more timber will be lost by decay. In the past, public-owned forests have been the chief sufferers from these losses from stagnating stands. This will continue until intensive management is applied to them, as well as to privately-owned forests.

The transition from exploitation to intensive management will not be complete until timber that has already been grown, or is grown hereafter, is utilized, as described, instead of leaving it to decay on the ground. The economic justification for this intensive management differs between the two parts of the state. Western Washington's forests, mostly within 50 miles of tidewater, and virtually all within 160 miles, constitute, with parts of Oregon and the redwood region of California, the most productive coniferous forest land in the world, so situated. All of these can place a wide range of forest products in world-wide markets, with the least expenditure of man-hours per unit of product. This accounts, in the main, for the higher wage rates that have always been paid here than in any other forest region.

Economics of forest production in eastern Washington rest more directly on local base. Already well-developed agriculturally, even greater development is in prospect with the completion of the Grand Coulee irrigation project. Already the fruit industry has been forced to accept boxes made from lower-grade lumber than formerly was used. In the future, it will be necessary to produce this and other shipping lumber by still closer utilization, if there are to be substantial quantities of higher grade lumber for export from the region.

North Carolina, in its unplanned transition from production of lumber from old-growth timber to its present substantial and, apparently sustained production, sacrificed much in quality. All interests in the State of Washington should unite not only on an expeditious transition to intensive management, but to one that will continue production of high-quality timber from which a great variety of forest products can be made for local, national, and world-wide distribution. To fall short of this goal for Washington's greatest economic resource, excepting possibly its agricultural soils, is to impair the future destiny of the state.

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# Maryland Forestry Law Held Constitutional

By FINDLEY BURNS

On a July morning of this year, Associate Judge George Henderson took the bench of the Garrett County Circuit Court and, arranging his papers, prepared to announce a decision in the case of the State of Maryland versus Troy Friend and Sherman Frazee, Garrett County timber operators, charged with violation of Maryland's pioneer Forest Conservancy Districts Act for 1943.

The operators were charged specifically with failing to register with the Maryland Commission of State Forests and Parks and pay a fee as required by the commission under the terms of the act. The fees involved were not large. As an out-of-state operator, Friend owed the state $25 while Frazee, a Marylander, owed $10. In declining to pay the fees "as a matter of principle," both defendants elected to challenge the constitutionality of the new law designed to control timber cutting practice on privately owned woodlands. Here the issue was squarely joined. Was this act constitutional or wasn't it?

Judge Henderson thought it was. In his decision he upheld both the right of the Commission of State Forests and Parks to require timber operators to register with it and pay an annual fee, as well as its authority to establish rules of forest practice. Friend and Frazee were each fined $50.

Aside from the question of constitutionality, the Friend-Frazee team raised three other points against the law, namely, that the law's title is defective; that it does not authorize the Commission of State Forests and Parks to charge for a license; and that the greater charge for an out-of-state license is discriminatory and therefore invalid. All these contentions were ruled out by Judge Henderson. Going further, he declared, in respect to the general authority vested in the Commission of State Forests and Parks under the terms of the act: "It is an appropriate use of the police power to prevent erosion, preserve forests and conserve the natural resources of the state."

In brief, the law authorizes the Commission of State Forests and Parks to establish regulations of forest practice on privately owned timberlands throughout Maryland, designed to ensure a healthy young growing stock of the more desirable tree species, to prevent clear-cutting except under certain prescribed conditions, to reduce fire danger and to prevent "tree butchery" such as that practiced by out-of-state operators in holly stands on the Eastern Shore and in southern Maryland.

A characteristic feature of the Forest Conservancy Districts Act—the one from which it derives its title—is the authority it gives the Commission of State Forests and Parks to appoint district forestry boards of five members to implement the law and the regulations locally. District foresters act as secretaries of the boards. General administration of the law is placed with the state forester.

In general, the policy of the Commission of State Forests and Parks is to appoint a district board for each county. Exceptions may be made in the case of two adjacent counties with relatively scant forest cover. The make-up of a district forestry board is regarded by the Commission as most important. It should, so the commission believes, represent a cross-section of the community. Its individual members should be well-known and respected locally, and have a genuine interest in forest conservation.

A very definite idea underlies the appointment of district boards. Those purposes include bringing the forestry law close to the people in an effort to localize it; to enable those who administer the law to keep in close touch with public sentiment and public needs; to avoid any semblance of a distantly-based, unsympathetic central authority; and to enable timber owners, and anyone else concerned, to have their problems settled on the ground, without delay or red tape. In short, the purpose is to make the whole structure a community matter, handled on a community basis.

In commenting on Judge Henderson's opinion, Lyle F. Watts, chief of the U. S. Forest Service, had this to say: "I note with interest and real satisfaction that the decision finds the law to be constitutional and in the public interest. It is especially significant that the opinion clearly recognizes the delegation by the legislature of regulatory powers to be exercised by duly qualified administrative agencies. This principle is perhaps the one most frequently challenged in discussions of such authority in existing or proposed forest-regulation legislation."

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## The Firing Line

(*From page* 394)

game along a road, preferably a paved road, for the chance of a storm with resulting mud and snow awakens in them all the foreboding of a soul lost in the wilderness."

In the fall of 1946 a hunter approached a forest ranger with this: "Where can I get an elk on the oil?"

Since the end of the war there has come a new threat — the airplane. Already it has been used to kill game, and game commissions are finding it necessary to have regulations to discourage its use. It has been used, not only to shoot game from the air, but also to drive geese and antelope toward hunters. In parts of interior Alaska, airplane pilots will circle above a moose, to reveal its location to a hunter, by previous arrangement. Advertisements have appeared in Alaska assuring the wealthy "sportsman" all the comforts of home at deluxe lodges, with airplanes at his service, and holding out the lure of polar bears, walrus, whales and other far northern animals — or money refunded! It has been reported that in British Columbia a plane was used at a base camp to taxi individual hunters to strategic haunts of mountain sheep and caribou.

Well, what of it? Do we want it? If we don't, what can we do about it? This year there will be protests again; there will be indignant resolutions; there will be published statements damning the state game commission, the local warden or any other administrator or agency that gets in the line of fire of our invectives. There is always the cry that our game herds are being destroyed —that we must give greater protection to our game, etc. But I wonder if our marksmanship is any better here than it is on the firing line? Any old-time hunter knows that excitement tends to spoil your aim. Are we sure we are firing at the right fellow?

I have joined in protests to state game officials in the past, and shall not hesitate to do so again whenever the need is apparent. But are the game authorities entirely to blame in this matter? Are the federal agencies? Are the sportsmen?

Some of our difficulties lie in the constriction of hunting areas and increase in the number of hunters. This results in congestion—too many of us in one place. We are no longer competing with the skill and wit of wild animals; we are competing with each other. In many places, because of elimination of ancestral wintering areas, game animals, too, are crowded, and too numerous for the range we are willing to let them have. As a result, the harrassed administrator of public lands, faced with the necessity of reducing herds, may be tempted to resort to unwise plans for effecting this reduction. Too often he decides to "open up" the back country with roads, thereby giving more hunters easy access to more game.

Here is where we need to look far ahead. Put roads into the back country and you merely extend the influence of the firing line in one way or another. Put roads into the back country and you are thereby further restricting the highest type of hunting territory. It is in the back country, removed from congestion, where we still have a remnant of true recreational hunting, where we still make it possible to maintain sportsmanship as we have generally known it.

One important danger to sportsmanship, perhaps the only one, lies with the sportsmen themselves. Are they going to continue to take advantage of all the mechanized facilities, such as the airplane, for hunting down big game? Will they continue to demand more and more roads to remove more and more physical exertion in getting their trophy or meat or "sport"? Is the remark, "Where can I get an elk on the oil?" to be heard more often in the future?

We should realize that big game hunting hangs in the balance, and the one who is in a position to push it into oblivion is the sportsman. When so-called hunting becomes too *raw*, and is reduced to mere killing and to squabbling over bloody remains like a pack of dogs, society will not tolerate it. That is already becoming evident.

Next time there is a revolting exhibition of the firing line, it may be unfair to "resolute" or editorialize against the game commission or some other administrative agency. Rather, it is important to consider the value of roadless back country, to consider means of promoting conservation of such areas. Above all, it is important for sportsmen to determine what restrictions they are willing to impose upon themselves, what *self discipline* is possible, in order to maintain sportsmanship and to save for themselves the big game hunting they still have.

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"What's different about Cletrac?" I snapped.

"Just this," he came back, "Cletrac's have an exclusive protected high clearance that lets them stay weeks longer in the woods in bad weather without miring down. They're real 'mudders.' They slide right over rocks and stumps. I'll take you over to the next camp where some Cletrac's are working and prove it."

Those Cletrac's in the next camp were working and in far worse going. It was proof enough for me. We've standardized on Cletrac and on our Oliver Cletrac dealer. He's a good guy to know.

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## Movie "Foresters"

(*From page* 402)

would baffle any botanist or forester. Fortunately, these strange wood creations are usually in the background of a scene.

For a Paramount film with an African setting, they needed a tree with a huge twisting trunk. Even if the desired tree could have been located it could not have been successfully transported to a sound stage. The only thing to do was make a tree!

The art department made a drawing to show the type of trees and vegetation that was needed for the jungle set. From this drawing an artisan in the plaster shop created a miniature jungle setting, to scale. This model was carefully followed by the carpenter shop in making the full-size tree. First, wooden hoops were lined up and fastened together. Next the carpenters covered this framework of hoops with lath, and this was covered with plaster of Paris. Live limbs from real trees were fastened to the synthetic trunk and painters sprayed and daubed it to give it a natural appearance.

The bark for an artificial tree is made of fiber and plaster from molds of growing trees.

Many times propmen face a problem, when trees on movie sets are shot out of seasen. Suppose a snowy New England winter orchard scene is being filmed in August. Naturally, they cannot use live fruit trees that have the leaves on them, so they must either find dead ones or build fake ones.

Another problem is filming spring scenes out of season. Thousands of artificial blossoms are kept on hand for this purpose. The green men have been known to change an odd tree into a peach tree in a few hours by wiring on hundreds of blossoms.

Real and artificial leaves and boughs are often added to actual trees to give them a more photographic appearance.

About 300 pine trees, ranging from 30 to 60 feet in height, were trucked from the San Jacinto and San Bernardino mountains to Paramount's Hollywood studio a few years ago to make a large movie forest.

The different tricks used by the movie foresters are only done for photographic or economic necessity. Many location trips for actual filming among the forest giants have always been made by Hollywood film companies — and, it is hoped, always will be.

# WANTED

## Back issues of AMERICAN FORESTS Magazine

In its task to meet the educational needs of forest-minded people, The American Forestry Association has drawn heavily from the many volumes of AMERICAN FORESTS. With a rapid exhaustion of the regular circulation stock, the Association has now made a serious drain on its own reserve supply of the magazine file covering the past 16 years.

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| Vol. No. | Year | Issue Numbers |
|---|---|---|
| 37 | 1931 | 1 |
| 39 | 1933 | 2,3,6,7,9,10, and 12 |
| 40 | 1934 | 7,8,9,10,11, and 12 |
| 41 | 1935 | 1 and 11 |
| 42 | 1936 | 9 and 10 |
| 44 | 1938 | 2 and 11 |
| 45 | 1939 | 11 and 12 |
| 46 | 1940 | 5,9,11, and 12 |
| 47 | 1941 | 2,3,8, and 9 |
| 48 | 1942 | 7 and 12 |
| 49 | 1943 | 5 |
| 50 | 1944 | 2,5, and 8 |
| 51 | 1945 | 5,6, and 12 |
| 52 | 1946 | 1,2,4, and 9 |
| 53 | 1947 | 1,2, and 5 |

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## Backyard Fishing

(*From page* 399)

Swingle and Smith found that both the bass and sunfish made the best growth and lived together most satisfactorily if 1,500 sunfish and 100 bass fingerlings were stocked to an acre. They used fingerlings because some kinds of adult fish soon became overcrowded. At this ratio, the bass keep the sunfish in check, yet allow a good proportion of them to grow to the legal six-ounce size. Fewer bass would fail to keep the sunfish within bounds. More of them might wipe out the sunfish entirely, leaving the bass without food. In fertitlized ponds they found that sunfish grow to four ounces in one year and bass about a pound. In the unfertilized ponds and streams of Alabama, it takes three or four years for sunfish and bass to grow that much.

Although successfully managed ponds can be as large as 70 acres, the Alabama experts found that most people build fish ponds too big. They say that it is far better to have a one-acre or two-acre pond properly managed than a 20-acre pond poorly managed. The highest maintenance cost of fish ponds is in fertilizing. It costs from $15 to $20 an acre each year to fertilize ponds, which limits their size for many prospective pond-owners. And one or two-acre ponds cost from $100 to $200 to build.

In one of their experiments, Swingle and Smith stocked a one-acre pond at the experiment station in February 1939, and drained it in December of the same year. The pond was stocked with the usual proportion of 1,500 sunfish to 100 bass fingerlings an acre. During the summer it was properly fertilized. Less than one year after stocking, it had 1,700 legal-size sunfish and 90 bass that averaged three-fourths of a pound each. Besides, there were enough sunfish and bass under the legal size to replace those that would have been removed by fishing.

For comparison, they drained a nearby 25-acre, 13-year-old pond. They found it filled with weeds. Other than fishing the pond, the owners had done nothing to manage it, but had restocked it every year. In the entire 25 acres of water, it had only 1,700 legal-sized sunfish, 800 bass weighing three-quarters of a pound each, and only six bass weighing more than two pounds. But there were about 500 thousand fingerling sunfish and bass. There were far too many small fish that found hiding places in the weeds and escaped the larger fish.

The one-acre pond had 20 times as


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many legal-size sunfish an acre as the 25-acre pond and twice as many three-quarter pound bass to each acre of water. Most of the weight of the fish in the properly managed pond was in legal-size fish which makes good fishing.

One- or two-acre ponds, properly managed, will support plenty of fishing for most sportsmen and their families. Ed Jeffers near Hamilton, Ohio, had a 20-acre pond too large for him to maintain. He interested a local sportsmen's club in the project and it now helps to pay for the pond's management in exchange for fishing privileges.

The ponds must be fished regularly throughout the summer or else there is little growth and the fish remain of one size. Swingle and Smith say that it is impossible to "fish out" a pond that has been properly stocked and regularly fertilized. No matter how much the pond is fished, no more than half the fish can be caught with hook and line. When those remaining are left with twice their former food supply, they simply stop biting for a few months until their populations build up and food becomes scarce.

The Federal Soil Conservation Service has helped 60,000 landowners build their own ponds. They have spread Swingle and Smith's research throughout the United States and brought good fishing to the doorsteps of farmers, ranchers and even city-dwellers, owning rural property. Not only have they helped landowners with pond building, but they have assured the ponds a long life by establishing soil conservation practices on land above them. This prevents their becoming choked with silt.

Fish ponds are not only attractive to people—they also invite birds and other wild creatures that spend part of their lives in or around water. Bob Coles, who owns a fish pond near Buffalo, New York, says that his pond has become a gathering place for practically all the wild creatures on his farm. On summer evenings, muskrats splash and play in the water and deer come down from his woodland to drink. In spring and fall, he has wild ducks and geese on the pond, and herons are there all summer.

Anyone owning a piece of land and a suitable site can have a fish pond, says Ed Graham, chief biologist for the Soil Conservation Service. But, he warns, ponds should not be built before consulting an engineer — or before referring to U. S. Department of Agriculture Farmer's Bulletin, 1859, "Stock Water Developments," or some other good reference. The

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Alabama Agricultural Experiment Station has bulletins on the subject.

Bass and sunfish fingerlings can be obtained from state-operated hatcheries at a small cost. Farmers get them free from the U. S. Fish and Wildlife Service if their applications are endorsed by the Soil Conservation Service.

Not long ago I returned to Alabama. I drove out to see my friend John Saylor whom I found netting fish that memorable day several years ago. After we exchanged greetings, we left the house and walked down to look at his pond. He had caught 10 bass and 50 sunfish from it a few days before I arrived. Saylor was as proud of his pond as a kid with a new pocketknife. Suddenly he looked at me with a twinkle in his eye.

"A fresh 'city slicker' passed by here the other day while I was catching that string of sunfish and bass. He walked up to me like you did that day and wanted to know if pond fishing wasn't pretty tame sport."

"What did you tell him?" I asked curiously.

"I told him to go to . . .

"To where?" I interrupted.

"To the Gulf of Mexico, the Atlantic Ocean, to the Pacific—anywhere that the size-hungry fishermen go! But I'll bet my last dollar that a 50-pound ocean-caught tuna wouldn't give him half as much kick as a five-pound bass caught in his own pond!"

## Woodland Management

(*From page* 412)

ized a profit and stumpage return of $32.50 a thousand on timber removed primarily to improve his forest stand.

In his pulpwood enterprise, he shows a similar record. He is selling the pulpwood, unpeeled, at $13.50 for a 160-cubic-foot unit. His cost of cutting and delivering it to the pulpmill is $10 a unit, leaving him a margin of $3.50 a unit—again on material cut primarily for stand improvement.

As a result of the present timber-cutting operations, Mr. McCorkle has utilized many trees which would have died in the next decade. His remaining timber stand is now in condition to assure maximum growth of clear, knot-free lumber. The former crowded condition has aided in producing the knot-free lumber by natural pruning of the lower branches.

A second cut is planned for 1956 after the remaining trees have had a chance to accumulate 10 years of clear growth. At that time, he doubtless will move into the other half of his forest to perform similar thinnings in the now small oaks.


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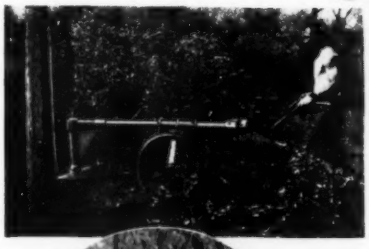

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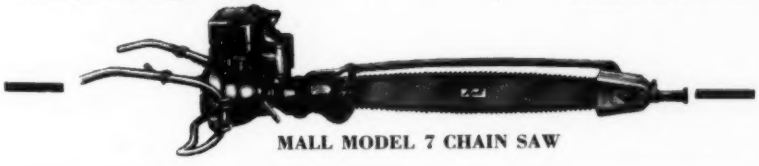

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9-47

# CONSERVATION IN CONGRESS

Leaving in its wake a mass of unfinished legislation affecting conservation, the first session of the 80th Congress adjourned on July 29, to convene again in January 1948. All appropriation bills had been passed. Funds which major conservation agencies will have during the fiscal year July 1, 1947 to June 30, 1948, are shown in the accompanying table.

Several bills of direct importance to forest conservation became law. Chief of these is Public Law No. 110 (S. 597, introduced by Senator Bushfield, South Dakota). Signed by the President on June 25, it provides for cooperation between the Department of Agriculture and the states and private landowners in the control of forest insects and diseases. The act establishes a pattern for pest control similar to that established under the Clarke-McNary Act for fire control.

The Capper bill, S. 338, to amend the plant quarantine act by authorizing the Secretary of Agriculture to limit the entry of foreign nursery stock and by providing for a post-entry quarantine against insects and diseases, became Public Law No. 290.

Only two of the bills affecting grazing lands were passed. S. 1368 (Public Law No. 273) increases the size of isolated or disconnected tracts of the public domain that may be sold from 760 acres to 1,250 acres and gives purchase preference rights to the owners of contiguous tracts. H.R. 4079 (Public Law No. 376) amends the Taylor Grazing Act with reference to grazing fees. Under the amended act, the Secretary of the Interior is authorized to assess a separate grazing fee for the use of ranges and a range improvement fee to be used in improving the ranges. The states will receive only twelve and one-half percent of the grazing fees instead of 50 percent of the total as at present. The purpose is to leave in the federal treasury an income approximately equal to the cost of administration.

In the whole matter of grazing lands administration, both on the Taylor Act lands and on the national forests, the House Committee on Public Lands has been authorized to make studies on the ground this summer and to report back to Congress at its next session.

**FEDERAL CONSERVATION APPROPRIATIONS**
**For Fiscal Year Ending June 30, 1948**

| *Appropriation and Project* | *1947 Appropriation* | *1948 Budget Estimate* | *1948 Appropriation* |
|---|---|---|---|
| **DEPARTMENT OF AGRICULTURE** | | | |
| Forest Service: (Total) | $71,990,193 | $68,920,150 | $59,020,041 |
| General Administration | 682,000 | 682,000 | 650,000 |
| National Forests: (Total) | 24,496,000 | 25,310,000 | 24,014,891 |
| General Management | 6,934,869 | 7,082,169 | 6,832,169 |
| Maintenance of Impr'v'ments | 2,654,276 | 2,675,276 | 2,575,276 |
| Fire Control | 6,783,877 | 7,154,877 | 7,154,877 |
| Insect Control | 100,716 | 100,716 | 100,716 |
| Timber Sales | 3,681,616 | 3,915,166 | 3,315,166 |
| Grazing Management | 791,228 | 794,428 | 794,428 |
| Wildlife Protection | 160,783 | 162,813 | ..... |
| Policing Camp Ground | 535,780 | 541,640 | 541,640 |
| Land-Use Management | 771,556 | 782,296 | 600,000 |
| Water-Use Management | 44,061 | 44,711 | 44,711 |
| Improvement Construction | 88,767 | 89,617 | 89,617 |
| Tree Planting—Revegetation | 1,948,471 | 1,966,291 | 1,966,291 |
| Fighting Forest Fires | *100,000 | 100,000 | 100,000 |
| Land Acquisition | 1,732,000 | 1,142,000 | 892,000 |
| Cooperation with States (Total) | 9,109,500 | 9,809,500 | 9,809,500 |
| Fire Control | 8,300,000 | 9,000,000 | 9,000,000 |
| Tree Planting and For. Coop. | 809,500 | 809,500 | 809,500 |
| Research (Total) | 5,257,000 | 5,302,000 | 4,547,000 |
| Forest and Range | 2,630,000 | 2,675,000 | 2,475,000 |
| Forest Products | 1,555,000 | 1,555,000 | 1,250.000 |
| Forest Res. Investigations | 1,072,000 | 1,072,000 | 822,000 |
| Roads and Trails | 26,214,222 | 23,800,000 | 16,300.000 |
| Naval Stores Cons. Pro. (AAA) | 800,000 | 800,000 | 732,000 |
| White Pine Blister Rust Control | 2,599,471 | 1,974,650 | 1,974,650 |
| *Forestry in Other Agri. Bureaus* | | | |
| Bureau of Entomology and Plant Quarantine: | | | |
| Gypsy-Brown-tail Moth Con. | 440,600 | 445,900 | 445,900 |
| Dutch Elm Disease Control | 316,900 | 321,700 | 101,800 |
| Forest Insects | 444,200 | 480,800 | 480,800 |
| White Pine Blister Rust Con. | 2,754,111 | 1,443,350 | 1,193,350 |
| Soil Conservation Serv. (Total) | 44,723,000 | 44,860,000 | 39,048,000 |
| **Extension Service | | | |
| Private Forestry Cooperation | [106,343] | [106,343] | [106,343] |
| Bureau of Plant Industry: | | | |
| Forest Diseases Investigations | 407,600 | 440,000 | 379,280 |
| National Arboretum | 85,900 | 761,000 | 436,900 |
| Bureau of Agricultural and Industrial Chemistry: | | | |
| Naval Stores Investigations | 152,550 | 152,550 | 152,550 |
| **DEPARTMENT OF THE INTERIOR** | | | |
| Bureau of Land Management: | | | |
| General Administration, Range and Timber Resources | 41,525 | 65,068 | 65,068 |
| Management and Protection, Range and Timber Other Than O. and C. Lands | 1,025,784 | 1,642,529 | 1,183,000 |
| Management and Protection, O. and C. Lands | 410,800 | 469,300 | 469,300 |
| Range Improvements, Public Lands | 255,000 | 253,000 | 253,000 |
| Leasing of Grazing Lands | 7,500 | 7,500 | 7,500 |
| Bureau of Indian Affairs: | | | |
| Management, Forest and Range | 794,128 | 1,145,000 | 801,500 |
| Fire Fighting | 62,000 | 12,000 | 12,000 |
| Fire Fighting (Tribal Funds) | [25,000] | [25,000] | [25,000] |
| Various Bureaus (From Appropriations Available to Office of Secretary): | | | |
| Soil and Moisture Con. | 1,606,830 | 3,000,000 | 1,900,000 |
| White Pine Blister Rust Control (Trans. from Dept. of Agri.) | 646,418 | 582,000 | 582,000 |
| National Park Service | 26,027,955 | 14,671,500 | 10,128,055 |
| Fish and Wildlife Service: | | | |
| Con. Fish and Wildlife | 7,302,602 | 7,838,300 | 6,532,810 |
| Fed. Aid, Wildlife Restoration | 2,500,000 | 2,500,000 | 9,031,275 |
| Migratory Bird Conservation | 1,800,000 | 2,000,000 | 2,000,000 |
| TENNESSEE VALLEY AUTHORITY (Resource Development Activities) | 6,024,000 | 7,476,000 | 5,500,000 |

*Supplemented by a deficiency appropriation estimate of approximately $4,000,000.
**Totals are included under "Tree Planting and Forestry Cooperation."

## The Woods Came to Us

(*From page* 407)

tween. Several feet from the eastern point of the porch is a white spruce. This, with the front planting, affords a woodland approach to the winding pathway to our main entrance.

There is another magnolia on the other end of our two-way main entrance and a white dogwood near the front pathway, several feet in front of the blue spruce. And last, but not least, a mimosa sits close to the house.

This undoubtedly sounds like a tremendous number of trees to have on so little ground, but the phenomenal part of it is that the place looks far more spacious than it did when we first occupied.

The only bird visitors we had in our original setting were sparrows and starlings. Now wrens bathe in the pool, robins strut over the lawn, a cardinal is particularly fond of the front spruce while humming birds feast on the coral bells.

All these blessings have come to us because we love secluded wooded nooks. And since business prevented our establishing our permanent location near a forest, we, like Mohammed and his mountain, let the delights of the woodlands come to us.

## Krug Decides in Favor of Jackson Hole Oil

At the time of going to press, Secretary of the Interior J. A. Krug signed an order permitting controlled exploration of oil and gas in the Teton National Forest area of Wyoming (see editorial "The Hour of Decision on Public Lands" in June issue). Authorization was given for drilling under "unit plans" in the area immediately east of Jackson Hole Monument and generally south of the Teton Wilderness Area, in the forest. The unit plan represents a compromise between the nation's needs for fuel and the desirability of preserving the national asset which lies in the Jackson Hole wilderness, the Secretary said. Informal hearings on this situation were held in Washington in May.

Restrictions imposed stipulate no unit plan will be approved unless the U. S. Geological Survey reports structural conditions such as to warrant the belief that lands contain oil or gas; that prospecting and development shall not be permitted until all lands within the area are made subject to the unit plan; and that all leases contain clauses giving the Secretary of the Interior control over the rate of prospecting and development and other protective measures.

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## DP's in the Woods

(*From page 397*)

habit of taking wood wherever they could find it. Most German foresters, aware that their people had to have wood for heating and cooking, would not interfere. Indeed, they were powerless to act even had they desired, since military regulations at that time would not permit German foresters to carry firearms. The degree of utilization, especially around cities, was about 100 percent. Not only were trees and limbs taken, but the civilians raked up most of the twigs and dug out the stumps. Many of the areas resembled a plowed field after the wood hunt was over.

On many DP operations, it was not unusual for a small army of civilians to take over when the woodcutters had returned to camp and make a clean sweep of branches, stumps and twigs. Sometimes German foresters would bring up an interesting machine they had developed to chop up limbs. Sticks under three inches in diameter were tied in bundles like grain and run through the chopper. They emerged in four-inch pieces which, when dried out, made excellent kindling.

Military officials issued an order through their food and agricultural section to the effect that 30 percent of the forest area in the British Zone be cut to make more land available for agriculture. This was a serious mistake, for it soon became evident that very little of Germany's forest land was suited to agriculture. Most of it was either too sandy, too sour, too swampy, or too mountainous. About the only forested lands suitable for agricutural purposes were small farm forests or woodlots, and to cut these would completely upset the local farm economy. The British, I believe, recently gave up the idea of converting any substantial acreage of Germany's forest land to agriculture.

When I left Germany in mid-summer, the greatest shortage in the field of forestry was planting stock. During the war years they permitted many of their nurseries to grow up in weeds. As a result, they haven't the planting stock necessary to fill in the huge gaps that are now being made in their forests. Neither do they have the seed needed to replant their nurseries.

In the DP's cutting program we were compelled to do things that ordinarily would bring tears to the eyes of professional foresters. For example, in a number of cases a fine, well-managed forest was turned over to us for clear-cutting simply because it was the property of an ex-Nazi. We were told that the owner was in prison and that his property had been confiscated by the military.

Of course, Britain needs wood. Unlike German forests, which were scarcely touched during the war because the Nazis drew heavily upon the resources of other countries, the forests of Britain are badly depleted. Durin gthe first six months of 1947, nearly 200 million board feet of timber was cut in the British Zone for shipment to Britain, and an additional large amount was sent over from the United States Zone. And this is by no means the only drain on German forests. With the Ruhr coal mines on a low production basis, the German population has to rely heavily on their forests for fuel. And this situation is not likely to improve this coming winter, particularly in the British Zone where there are large urban areas and great concentrations of refugees.

Thus demand is draining off the forest yield faster than it is being grown. And to make matters worse, good forestry practices are not being followed in these timber operations. Many of the forests are being "butchered." Stands generally have been selected because they were handy to

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transportation, not because they were ready for harvest.

German foresters claim that the British military officials pay little attention to their recommendations. British officials say the Germans don't like to see their trees cut down—that they are constantly trying to sabotage or slow down their program. If some workable plan is not agreed upon soon, this might be a good question to refer to forestry delegates attached to the United Nations.

There is no question that Britain is entitled to some assistance from Germany to help supply her timber needs. Also, there is no question that Germany can supply considerable timber towards meeting those needs. However, the program should be placed in the hands of trained foresters—and not timber merchants.

Probably more than half of the labor used in harvesting this timber for export has been supplied by DP's, principally the "Balts." And it might be surprising to know that most of the Balt foresters side with the German point of view. Be that as it may, the important thing is that large sections of what was formerly forested areas in northwestern Germany now present a picture of utter desolation. For the good not only of Germany but of all Europe, including Britain, this should not be.

## Sweet Gum from Sweetgum

(*From page* 405)

bama but, we learn, from Georgia and Texas, and possibly some other states. All in all, the situation must be handled carefully to see that there is not overproduction, thus destroying the market price."

While aware of the pitfalls in producing too much gum, Clarke farm leaders realize that a sufficient quantity should be supplied to meet all normal demands with a reasonable price. This is sound policy, as the markets for American storax will be encouraged to the greatest extent, and uses perhaps expanded. Now that more labor is available, production is increasing substantially in the county.

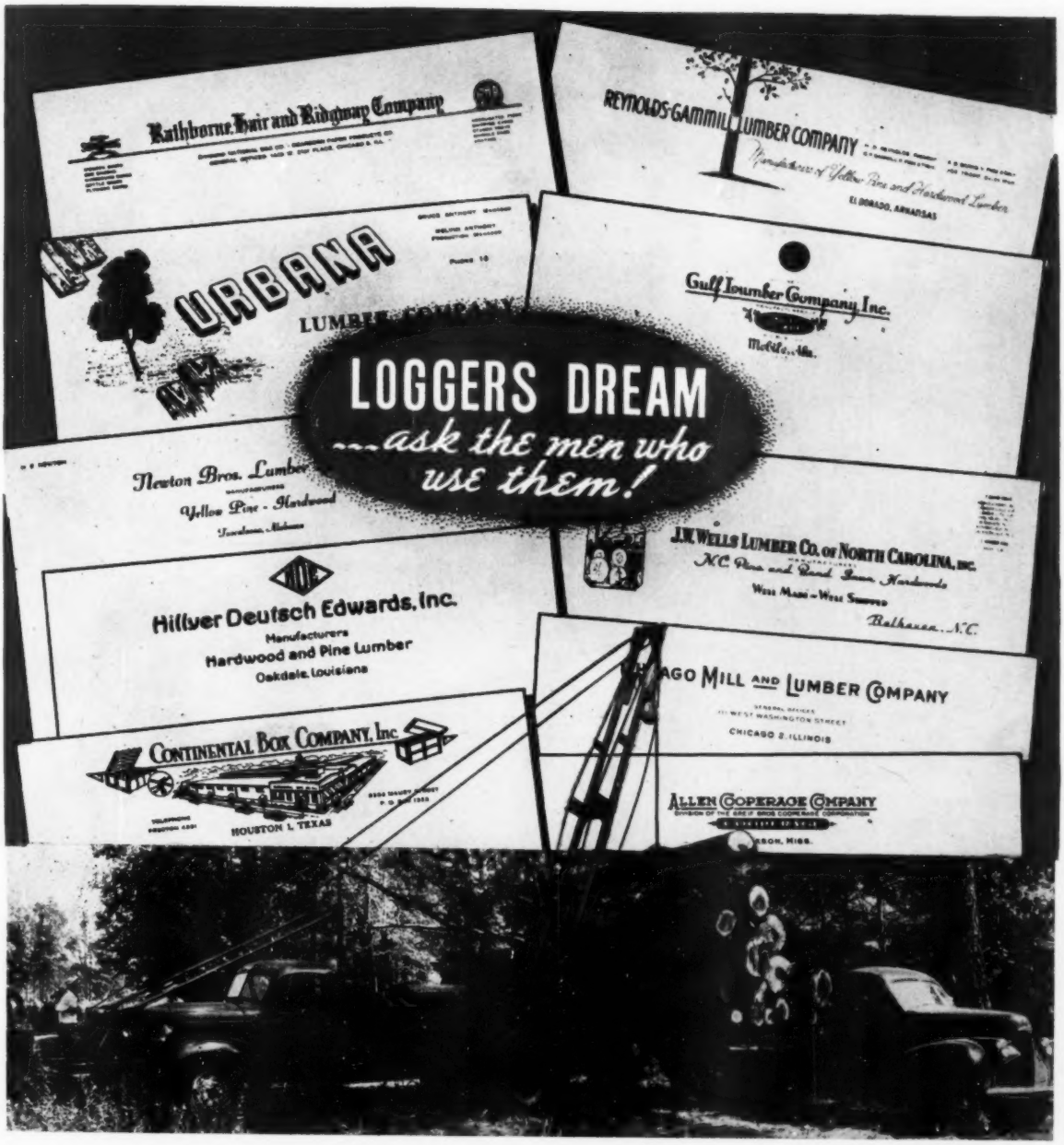
One factor will help to keep production from skyrocketing. Some of the work, as already indicated, is hard and tedious. Gum orchards, started by persons who do not find the work to their liking, frequently are leased to others.

Is good forestry jeopardized through the working of gum for storax? As a general thing, Helms believes not. If the gums are suitably shaped for veneers and good lumber, they can be sold after being worked out. A great many of the trees being worked in Alabama tend to be the limby types that enjoy no premium for timber. When a limby or twisted gum can put a dollar or more yearly into a farmer's pocket, it is very good forestry. Low-grade gums, ordinarily forest weeds, become prize trees.

The pleasant fragrance of this gum balsam deserves a final mention. When advertisers extol the flavor of various pipe tobaccos, they are probably right. They do have something in their tobaccos — something, no doubt, from a lowly gum tree.

## AUTHORS

PHILIP H. BAILEY (*Tricks of the Movie "Foresters"*) is a Hollywood writer. JOHN W. BRAINERD (*Meeting Red Maples*) writes when he has time, while completing his studies in ecology at Harvard. BURT P. KIRKLAND (*Washington Forests in Transition*) was principal forest economist for the U. S. Forest Service from 1931 to 1944, then regional consultant on the AFA Forest Resource Appraisal staff. He now has a lumber mill at Worcester, New York. MARVIN KLEMME (*DP's in the Woods*) has studied land utilization in many parts of the world and recently returned from Germany where he spent two years as a forester with UNRRA. CHARLES R. ROSS (*Sweet Gum from the Sweetgum*) is extension forester, Oregon State College, Corvallis, Oregon. JOHN K. TERRES (*Fishing in Your Backyard*) was field biologist with the Soil Conservation Service for eight years and spent much time helping farmers stock their ponds. He writes from New York.

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